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Canada Bureau of Statistics

CANADA 1961

The
Official Handbook
of
Present Conditions
and
Recent Progress

Prepared in the
Information Services Division
Dominion Bureau of Statistics

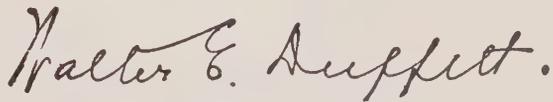
Published under the authority of
The Honourable George Hees
Minister of Trade and Commerce
Ottawa

Foreword

THE illustrated Canada Handbook offers to the Canadian public and to the peoples of other lands a factual, annual survey of the Canadian economy set in a statistical background and illuminated with illustrations of the recent economic, social and cultural developments of the nation. In text and tables, in layouts and illustrations, *Canada 1961* seeks to portray the present conditions of the Canadian people, their economy and its resources, their institutions and their way of life.

Apart from its special features, *Canada 1961* draws on the same official sources of the Dominion Bureau of Statistics and the various departments of the Government of Canada that contribute to the larger reference volume, the *Canada Year Book*. The illustrations are selected from a wide range of governmental, commercial, press and private sources.

Canada 1961 is edited and produced by Mrs. Helen Marsh in the Information Services Division of the Dominion Bureau of Statistics under Dr. C. C. Lingard, Director of the Division.



Dominion Statistician

Dominion Bureau of Statistics,
Ottawa, April 1, 1961.

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Wind and water erosion constantly change the contours of the stratified deposits laid down during past milleniums.

Biography of the Land

THE face of a country is a living autobiography, and on it the lines of history are written in stone and sand and water. The human face acquires its lines of revelation in less than a century; the face of a country is the end result of years of continuous change.

To mortals, who think in terms of days, weeks and months, the earth is almost inconceivably old—four to five billion years. That part of it on which Canadians live has been shaped and molded, chipped and broken, scoured and scraped, flooded and frozen, twisted and bent in a series of physical revolutions into a unique pattern of ancient granitic and volcanic rocks, vast sedimentary plains, lofty jagged mountains, vast lakes and rivers and ragged marine coasts. The ceaseless evolution of the earth's crust has an intimate relationship to the life and livelihood of those who people it; it determines whether they shall fish or farm, cut wood, mine for metals or

manufacture goods. To the eyes of those who can read the earth's biography, it is the blueprint, forever under revision, for the structure of a nation's economy.

The earth in its infancy was a streamer, torn from the sun, which later formed a spinning globe of fiery gases. For millions of years it whirled around the sun and the gases condensed to liquids, the heavier parts settled towards the centre of the mass and it turned into a glowing ball of molten iron and rock enveloped in a crust and surrounded by a heavy cloud of steam and other gases. Unmeasured time passed before the steam was chilled enough to condense to rain which turned again to vapour as it neared the hot surface of the earth. At last the earth cooled; the unceasing rain collected on the ground and eventually the earth was covered by an endless sea, ebbing and flowing in rhythmical obedience to the attraction of the moon.

As the earth's crust cooled, it shrank, faster than the hot rock core. It cracked and buckled; parts sank and great masses were thrust outwards. The terrible stresses pushed rock against grinding rock to form the first mountains, and the waters rushed in to the low places to become the first oceans and rivers. Then began the unending battle of wind and water against rock; the breakdown by erosion of rock into boulders, then gravel, then sand and mud; carried by the violence of the mountain torrents, scraped along tumultuous rivers, finally deposited in the lowest parts of the valleys and the ocean beds. As millions of years drifted by, these deposits became heavier and heavier; the weight balance of the earth's crust was unevenly distributed, and finally another great revolution took place, the crust breaking and heaving and thrusting outwards into mountains higher than any of today, the continents changing their shape, and the new topography altering the course of the winds and, therefore, the climate, so that in one era of geological time an area might change from a temperate land of warm seas to a frigid expanse of massive glaciers.

This cycle of action and reaction—uplift and erosion—repeated itself many times and in many places; the geological eras began and ended with periods of violent contortions of the face of the earth.



The Precambrian Shield, ancient treasure-house of mineral wealth, exposed in the Arctic Islands. In the icy silence of these expanses of rock and water, no trees grow and the only life is that which can be supported by the resources of the seas and lakes.



On Axel Heiberg Island, far to the north, large ice fields cover much of the country and glaciers flow slowly toward the sea, scouring the rock surface and transporting rocks, boulders and other glacial debris.

It is now 500 million years since the basic pattern of the Canadian economy was drawn, for it was during the Precambrian era that the Canadian Shield—that vast outcropping of immensely rich, ancient rocks—was formed. During the long ages of Precambrian time, great accumulations of lava flows and sedimentary rocks were formed. These layered rocks were folded into mountains. In their roots great volumes of super-heated rock became fluid to form granites and other igneous rocks. These ancient mountain ranges were worn away by erosion exposing their granite cores, the seas encroached on the resulting low lands and the cycle of deposition of sedimentary and volcanic rocks, mountain building, granitic intrusion and erosion began again. This cycle was repeated many times during the immensely long Precambrian era which lasted 4,000 million years. As a result of this long and complex history the Shield now consists mainly of granite with relatively small areas of steeply folded volcanic and sedimentary rocks scattered through it. Since the close of Precambrian time the Shield has remained a stable unit, sinking at times in part or whole below the sea but not at any time subjected to mountain-building forces. The Canadian Shield and similar stable shield areas in Scandinavia, China, Australia and Brazil constitute the oldest parts of the face of the earth, and a seemingly inexhaustible treasure-house of iron, uranium, copper, nickel, silver and gold, and many other minerals.

Today the Canadian Shield occupies an area of approximately 1,800,000 square miles, forming an immense V with an arm on each side of Hudson Bay and its outer limits defined by the huge lakes of Canada—Great Bear, Great Slave, Athabasca, Winnipeg, Superior, Huron—and the Ottawa and St. Lawrence Rivers. It is saucer-like, sloping gently toward the central depression of Hudson Bay, around which it lies only a few feet above sea level. Nearly all the Shield is less than 2,000 feet above sea level and over most of it the local relief is less than 200 feet. However, in Northwest Labrador mountains rise to 5,000 to 6,000 feet and in Baffin Island as much as 8,000 to 10,000 feet above the sea. Over the greater part of the Shield intense glaciation has left scattered rounded rock outcrops separated by deposits of sand, gravel and boulders, muskeg, and myriads of lakes of all sizes and

shapes. Connecting them are thousands of streams and rivers, interrupted by many falls and rapids—prime sources of hydro-electric power. The northern part of the Shield lies beyond the limit of tree growth and the ground is permanently frozen except for a thin surface layer that thaws each summer.

The next 300 million years—the Palaeozoic era—also profoundly influenced the future economy of Canada. The rocks of this period contain the first record of life, although probably life began, at first microscopic and rudimentary, in the Precambrian era but left no fossil record. During the Palaeozoic period life grew in complexity and size; ultimately, in death, plant and animal life formed vast beds of coal and became the source for accumulations in the rocks of oil and natural gas.

During this period, and in the Mesozoic and Cenozoic eras which followed, great inland seas advanced and retreated over the North American continent. As the waters ebbed from the land, extensive jungle-like forests grew in the vast swamps. As the trees died, they sank in the swamp to form peat; then, as they became buried beneath successive layers of clay or mud, the pressure changed the peat to bituminous or soft coal. In areas where the coal beds have been folded by mountain building forces, the transformation continued until the soft coal became hard coal, or anthracite. Today great blanket-like beds of soft coal, inter-layered with clay or shale, are found in the Interior Plains, in Nova Scotia, the Hudson Bay Lowlands, the Cordillera and the Arctic Islands. Some hard coal is found in the Rocky Mountains.

Minute marine organisms, known collectively as plankton, flourished in these ancient seas. When they died, they sank to the bottom, and became mixed with mud; in this way thick deposits of clay were formed in which was incorporated a large amount of organic matter. These deposits were buried beneath further great thicknesses of sedimentary rocks whose weight produced pressure and heat, changing the organic matter into a series of new compounds of carbon and hydrogen, known as the “hydro-carbon series”. Some of these compounds were gaseous, some liquid, and they migrated through the rocks to form rich accumulations of natural gas and petroleum throughout much of the Interior Plains. In these ancient inland seas beds of gypsum and common and potash salts were deposited thousands of miles from the seas of today.

At various periods the continent of North America extended far beyond its present shores. In the period in which we are now living, part of what were formerly coastal plains is under water. As the waters ebbed and flowed around the world, sand, gravel and mud were carried outward and deposited in the oceans along the margins of the continent to form the continental



Folded rocks of the Innuitian Region of the Arctic Islands.



One of thousands of waterfalls, potential source of hydro-electric power. These are the Otter Falls, in the Yukon Territory. Their picture may also be viewed on the back of the Canadian \$5 bill.

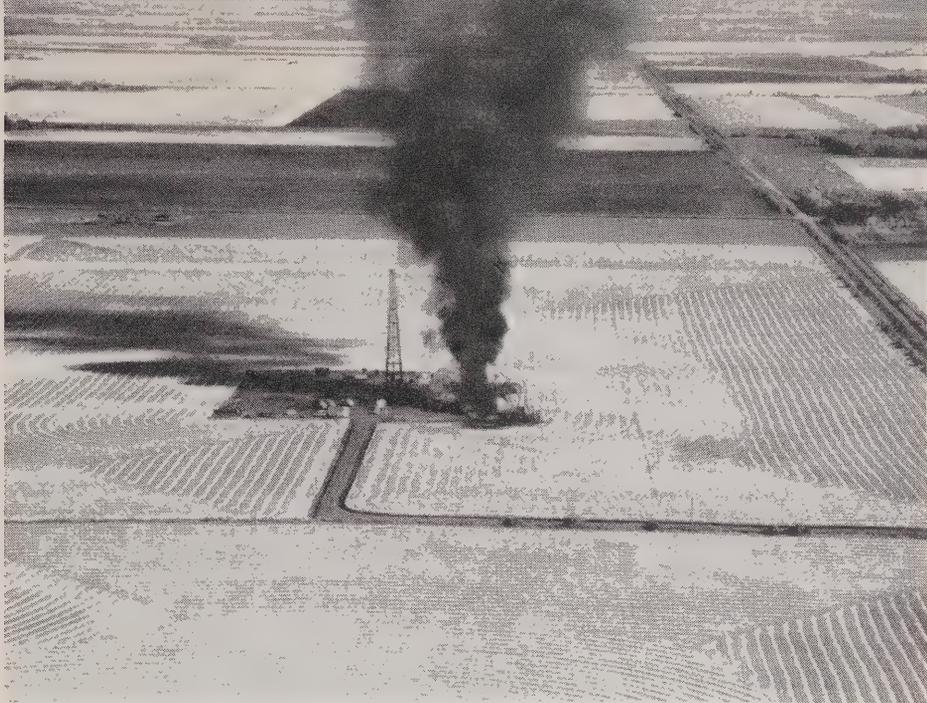
shelf, a sort of gently sloping platform extending far into the sea before the real "ocean depths" suddenly drop downward. This shelf provides a fishing ground which attracts commercial fishermen halfway round the earth.

Within the last million years, in the Pleistocene period, the climate of Canada has changed from temperate to frigid on at least four occasions. The rain turned to snow which piled up to unbelievable heights. By its own weight the snow was changed to ice which accumulated to depths of a mile or more

and flowed outward from several centres or divides. As the ice moved it scraped off the soil and rotted surface rock and ground, scarred and polished the bedrock surface. When the last ice sheet retreated to the north only 25,000 years ago, it left for future Canadians the Great Lakes system, destined to become the world's greatest inland deep-sea waterway. It also left dry glacial lake bottoms covered with clays and silts which now form the clay belt of northern Ontario and much of the rich prairie farmlands that stimulated the opening of the west and the eventual establishment of Canada as one of the world's great grain producers.



One of the strange "hoodoos" of the Badlands of Alberta. The banded shale is worn away by wind and rain, leaving a sandstone slab balanced precariously on top. It will eventually fall, but more "hoodoos" are constantly being created.



The soils of the rich prairie farmlands formed from deposits left by glaciers a few thousand years ago. Hundreds of millions of years before this, in rock strata now deep below the surface, were buried the early forms of life which later formed pools of oil and natural gas. Both these resources have had a telling influence on the Canadian economy.

Two other geological regions of Canada have been described as outliers of the Interior Plains—the Hudson Bay Lowlands and the St. Lawrence Lowlands. Both are underlain by gently dipping sedimentary rock formations of Palaeozoic age, deposited in epi-continental seas. The Hudson Bay Lowlands is a low swampy region with a subarctic climate. It is known to contain deposits of low grade soft coal but so far little else of economic value has been found.

The St. Lawrence Lowlands, however, are highly productive. The rocks contain deposits of petroleum, natural gas and large salt deposits that have been worked for many years. The area has a very favourable climate and rich grey-brown soils and is farmed intensively. The large water power resources of Niagara and the Great Lakes transportation system are favourable for industrial development and although the region is relatively small it supports nearly two out of three Canadians.

Beyond the Interior Plains, the Cordilleran Region embraces the mountainous areas of western Canada, the result of a series of mountain-building revolutions and the accompanying igneous activity which occurred 70 to 200 million years ago. It, too, contains many deposits of silver, lead, zinc, and other minerals and tumultuous mountain rivers ideal for the development of hydro-electric power. Between the Rocky Mountains and the Coastal Range is a fertile glacial valley 130 miles long, irrigated by melting snows from the sheer hills on both sides. Here, each year, millions of trees give forth their bounty of apples, peaches, pears and plums.

The Rocky Mountains form the eastern part of the Cordilleran Region. Because the Rockies are, geologically speaking, young, they are characterized by swift, narrow rivers, waterfalls, canyons and sharp peaks, features of



Steep rock faces, jagged rocky islands, sand and gravel beaches are the results of the ceaseless process of coastal erosion.

such awesome beauty that the names Banff and Jasper are known all around the world. Even a flourishing tourist industry was provided for in ancient time!

Across the continent to the east, the Atlantic provinces and southeast Quebec form the northern section of the Appalachian Region, an ancient mountain system which extends from Alabama in the southwest to Newfoundland in the northeast. Erosion has so planed the mountains down that the highest peak is but 4,200 feet, and glaciation has left fertile plains in sheltered valleys, of which the Annapolis Valley is a famous example. Deposits of copper, iron, lead, zinc, gypsum, barite and fluorite are found and mined in this region as are deposits of coal and the world's largest reserves of asbestos.

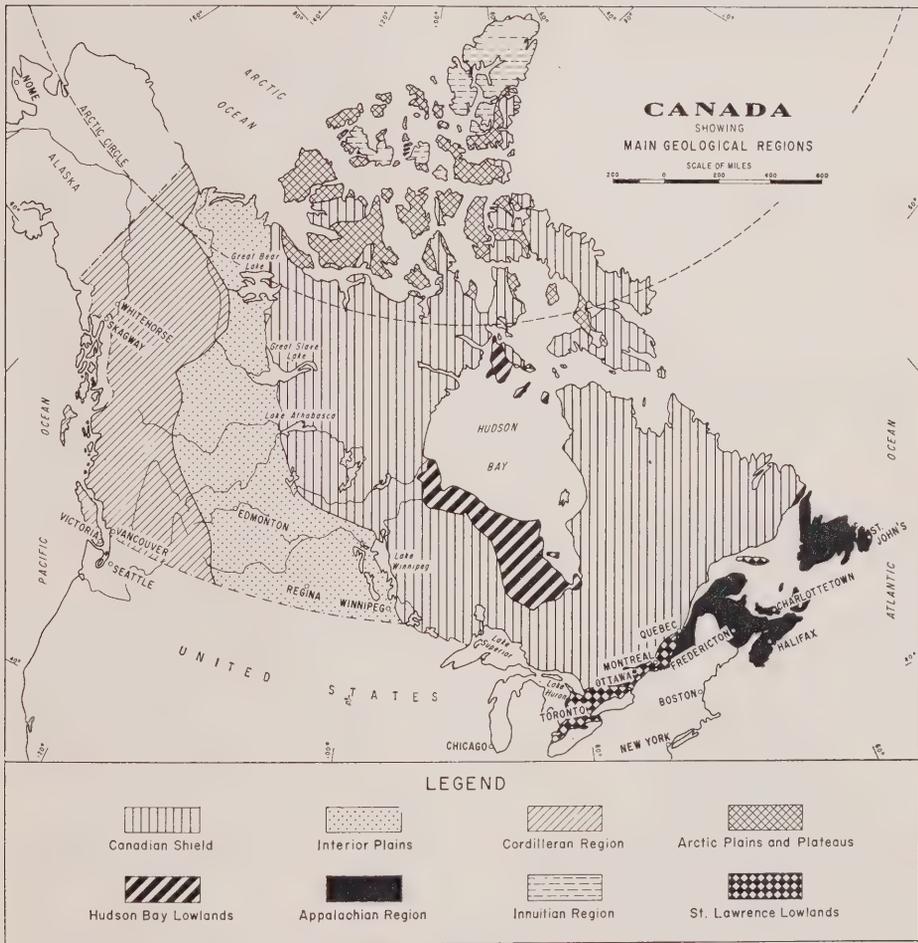
Far to the north, in a climate so severe that their natural resources defy exploitation, are the Arctic Islands, spread over half a million square miles. Geologically, most of the islands form part and are an extension of the Canadian Shield and the Interior Plains, but in the far north the Innuitian Region is an extensive belt of fold mountains 800 miles long, extending from northernmost Ellesmere Island south and west to the western edge of Melville Island, with peaks rising to 12,000 feet. To the west of the Innuitian Region are the islands of the Arctic Coastal Plain which slopes gently toward the Arctic Ocean. In the Arctic Islands numerous occurrences of coal, salt and gypsum are known and geological conditions suggest that valuable deposits of petroleum and gas may be found eventually.

Across the whole of Canada, except for the Interior Plains, the northern part of the Shield and the Arctic Archipelago, is a broad swath of dense and prolific forest. Almost half the total land area of Canada is forest: there are

more than 150 species of trees; providing a rich variety of woods for pulp and paper, lumber and wood-using industries.

This, then, is Canada's heritage of time: bountiful and accessible fishing-grounds; mineral resources so rich that Canada is one of the world's greatest ore producers, though its supplies are barely tapped; vast farmlands ideally suited to all forms of agriculture from peaches to oats, from cattle to mink; lavish stretches of forest which yield the world's second greatest supply of pulp and newsprint; underground store-houses of coal, natural gas and petroleum; horse-power for the harnessing, from thousands of rivers and streams; and a built-in transportation system which slices into half the continent. Thus, for millions of years, the pattern has been developing for the Canadian way of life, one that has produced a nation of fishermen and farmers, lumbermen and miners, oil-riggers, steel-workers and road-builders, railwaymen and skilled artisans, shop-keepers and office workers.

There are still many geological eras to come but, for the future as man can comprehend it, the Canadian way of life will always be deeply and inextricably dependent on the face of the land as it is at this infinitesimal moment of eternity.



The Main Geological Regions of Canada.



The Climate

Canada has many climates, which vary from place to place and from season to season. Throughout most of Canada the seasons bring sharp contrasts, and extreme variability of weather may even occur in a matter of hours. There is nothing static or monotonous about Canadian weather and the pattern of work and play fluctuates throughout the year in deference to the dictates of the thermometer.

There are many interesting and exceptional facts about the Canadian climates, but they are by no means unique in the world. In general the climates of the southern portion of Canada may be compared to those across the

breadth of Europe and Asia. The moderate temperatures and abundant precipitation of the Pacific Coast of British Columbia are somewhat similar to the climates of the coast of Norway; Vancouver weather, for instance, is similar to that near Bergen. However, the protected and sheltered climate of Victoria is more like that experienced in the low countries of Belgium and Holland. Moving eastward, the dry continental-type climates of Canada's Prairie Provinces are roughly comparable to the central regions of European U.S.S.R. For example, the climate of Calgary is not unlike that of an area north of Moscow. Further to the east across the continents and into more humid regions again, a climate similar to that at Ottawa is found at Harbin in Manchuria. Coastal Nova Scotia has its climatic counterpart in the northern Japanese island of Hokkaido. Finally, while the climate of the Canadian Arctic has the same characteristics as that of the U.S.S.R. Arctic, the cold pole of the eastern hemisphere in Siberia has winter temperatures that average much lower than any in Canada.

Located in the northern half of the hemisphere, the lands of Canada annually lose more heat to space than they receive from the sun. At the same time low latitude tropical countries are receiving more heat than they lose. To compensate for this, and to maintain a heat balance over all the earth, a general atmospheric air circulation regularly transfers heat poleward. This air movement, known as the "general circulation", undergoes seasonal variations and is broken into latitudinal belts or cells known from equator to pole as the doldrums, the easterly trade winds, the high pressure belt, the prevailing westerlies and the polar easterlies. Most of Canada lies in the zone of the westerlies; the polar easterlies are not well developed in this hemisphere and only occasionally in summer does southeastern Canada come under the direct influence of the Atlantic high pressure cell.

The general movement of air from west to east over Canada in the westerlies zone is not nearly as persistent as the winds in other circulation belts such

as the trade wind zone. Migrant low pressure areas move across Canada in the westerlies stream causing the air to blow around them in an anti-clockwise direction while anticyclones or high pressure areas produce a clockwise circulation as they too move from west to east. The movement of these high and low pressure areas is associated with the constant struggle taking place over North America between cold air attempting to surge down from the north and warm air trying to flow up from the south. This inter-action produces low pressure areas while the boundary line between the contrasting air masses is known as a weather "front". Large areas of cloud, precipitation and generally poor weather usually accompany these low pressure areas and fronts.

Although the general circulation of the atmosphere is the controlling factor over the Canadian climate, the physical geography of North America contributes greatly to the general pattern. If the shape of the continental land mass were different the general patterns of air flow would similarly be different than they are. Also, the physical geography of the continent greatly modifies the effect of the general circulation and produces a variety of climates in Canada that would not be expected from the general circulation alone.

The presence of the Western Cordillera has a great effect on the climate of western Canada. These mountains limit the humid and mild air from the Pacific to a narrow band along the coast, despite the general westerly circulation. As the air is forced aloft over the successive mountain ranges, it is compelled to give up its moisture, becoming relatively dry and warm by the time it flows over the prairies. Were it not for the Cordillera, a humid, moderate temperature type of climate would extend for hundreds of miles into western Canada. On the other hand, the mountains physically block the occasional westward-moving outbreaks of cold Arctic air which would otherwise reach the coast from the north and east.

East of the Cordillera and extending from the Arctic Ocean across Canada and the United States to the Gulf of Mexico lies a broad, relatively flat corridor. Consisting of Arctic barrens and boreal forests in the north and agricultural lands in the south, this corridor presents no obstacle of importance to the movement of large air masses from either the north or south. Warm moist air from the Gulf of Mexico is able to flow northward, providing the ample precipitation of southeastern Canada, while massive cold air outbreaks from northwestern Canada are able to plunge southward and eastward without encountering any physical barrier. It is this north-south corridor open to rapid air flow from either direction that makes interior Canada so vulnerable to sudden and drastic weather changes.

On the other hand, the large water surfaces of central and eastern Canada produce a considerable modification in the climate. Winters are milder with more snow in southwestern Ontario, while in summer the cooling effect of the lakes is well illustrated by the number of resorts along



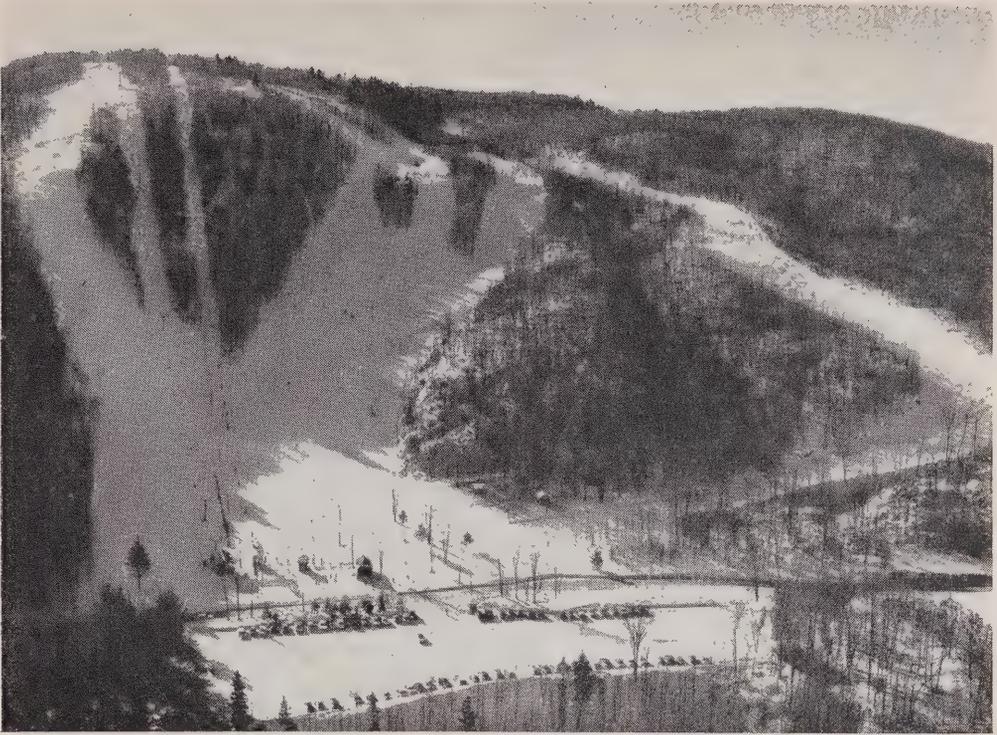
their shores. To a lesser degree the smaller lakes in interior Canada modify the climate but only of the adjacent shores.

The Atlantic Ocean has little effect on the climate of Canada compared to that caused by the Pacific. Occasionally there is an extensive circulation of moist cool air over eastern Canada from the Atlantic but this is an abnormal situation. Of course, the coastal areas of the Atlantic Provinces do have modified temperatures and increasingly humid conditions when the winds blow inland from the ocean. The cold Labrador Current maintains Arctic-like conditions along the Labrador coast and is responsible for the extensive areas of fog and low cloud over and off the Atlantic Provinces in spring and early summer.

Temperature and Precipitation Data for Certain Localities in Canada (Long-term averages)

Station	Temperature (deg. Fahrenheit)					Precipitation Av. Annual (inches)	Bright Sunshine (hrs. per annum)	Freezing Temper- ature (days)
	Av. Annual	Av. Jan- uary	Av. July	Extreme High Recorded	Extreme Low Recorded			
Gander, Nfld.....	38.9	18.6	61.6	96	-15	39.50	1,413	190
St. John's, Nfld....	41.0	24.0	60.0	93	-21	53.09	1,464	179
Charlottetown, P.E.I.....	42.5	18.8	66.6	98	-27	43.13	1,857	154
Halifax, N.S.....	44.6	24.4	65.0	99	-21	54.26	1,876	134
Sydney, N.S.....	42.8	22.7	65.0	98	-25	50.61	1,745	162
Saint John, N.B....	42.0	19.8	61.8	93	-22	47.39	1,902	148
Sept Îles, Que....	33.0	3.2	59.2	90	-46	41.94	..	210
Montreal, Que....	43.7	15.4	70.4	97	-29	41.80	1,811	143
Port Arthur-Fort William, Ont....	36.8	7.6	63.4	104	-42	31.62	1,797	208
Toronto, Ont.....	47.0	24.5	70.8	105	-26	30.93	2,047	123
Churchill, Man....	18.7	-17.3	54.7	96	-57	15.01	1,646	255
Winnipeg, Man....	36.6	0.6	68.4	108	-54	19.72	2,126	194
Regina, Sask.....	36.1	2.3	66.6	110	-56	15.09	2,264	214
Edmonton, Alta....	36.8	7.7	62.9	99	-57	17.63	2,173	196
Fort Nelson, B.C..	30.2	-7.3	61.7	98	-61	16.37	..	216
Victoria, B.C.....	50.2	39.2	60.0	95	-2	26.19	2,093	20
Whitehorse, Y.T... Aklavik, N.W.T....	31.1 15.8	5.2 -18.2	56.2 56.4	91 93	-62 -62	10.67 9.77	.. ..	219 261
Frobisher Bay, N.W.T.....	15.8	-15.8	45.7	76	-49	13.53	..	273





Canada's largest ski club enjoys highly developed facilities in the Gatineau Hills. Chalets have been built, woods have been cleared, a variety of tows installed and, when necessary, snow is made artificially to cover the runs. On a fine Sunday afternoon, 8,000 skiers may be seen at Camp Fortune, 10 miles north of Ottawa. In the winter of 1961, a helicopter service from Ottawa was inaugurated to furnish transportation.

The Face of the Land

CANADA, the world's second largest country, has more than half the world's fresh water. Of its land area of 3,560,238 square miles, 7.6 p.c. is occupied agricultural land—under crop, in woodland or unimproved. Forested land, both productive and unproductive, accounts for 48 p.c. of the total and the remainder includes rock, muskeg, urban land, road allowances, etc.

Approximate Land and Freshwater Areas of the Provinces and Territories

Province or Territory	Land	Freshwater	Total
	sq. miles	sq. miles	sq. miles
Newfoundland (incl. Labrador)	143,045	13,140	156,185
Prince Edward Island	2,184	—	2,184
Nova Scotia	20,402	1,023	21,425
New Brunswick	27,835	519	28,354
Quebec	523,860	71,000	594,860
Ontario	344,092	68,490	412,582
Manitoba	211,775	39,225	251,000
Saskatchewan	220,182	31,518	251,700
Alberta	248,800	6,485	255,285
British Columbia	359,279	6,976	366,255
Yukon Territory	205,346	1,730	207,076
Northwest Territories	1,253,438	51,465	1,304,903
Canada	3,560,238	291,571	3,851,809

The total area classified by tenure is as follows:—

	<u>Sq. miles</u>		<u>Sq. miles</u>
Privately owned or in process of alienation from the Crown....	389,385	Provincial lands other than Provincial Parks and provincial forest reserves.....	1,630,982
Federal lands other than leased lands, National Parks, Indian reserves and forest experiment stations.....	1,531,328	Provincial Parks.....	58,131
National Parks.....	29,280	Provincial forest reserves....	203,294
Indian reserves.....	9,223		
Federal forest experiment stations.....	186	TOTAL AREA.....	<u>3,851,809</u>

The high figure for federal land is accounted for by the fact that it includes the total area of the Yukon and Northwest Territories. All unalienated lands within the provinces are administered by the provincial governments.

Canadians have a great love for the countryside and are fortunate to live in a land where they can reach open country quite close to their permanent homes. The summer cottage—owned or rented—is, perhaps, most widely used for vacations, particularly for families with small children, and overnight, weekend or holiday camping is becoming more commonplace every year. There must be few Canadians who are not familiar with the gentle music of water lapping on a beach and wind whispering through woods or, perhaps, rain dropping on canvas! Canada has scenery to satisfy every preference, from salt surf to wooded pool, from desert to jagged mountain peak, from shimmering beach to blunt brown hill.

The four Atlantic provinces—Newfoundland, Nova Scotia, New Brunswick and Prince Edward Island—are almost surrounded by the sea. Only Prince Edward Island is a gently rolling lowland, its neat white farms nestling composedly among lush green meadows or rich fields whose soil is a distinctive red. The three other provinces are characterized by the worn-down hills of the Appalachian chain of mountains, much cut up by rivers. This combination of hills and rivers results in an exceptionally intricate and rocky coastline with numerous good harbours. The river valleys are mostly fertile and the hills are covered with trees. Fishing, forestry and some mining are carried on in varying degrees; in New Brunswick and Nova Scotia, agriculture is also important and, in the latter province, the Annapolis Valley is famous for its orchards.



White frame houses and neatly stacked lobster traps characterize the peaceful fishing village of Rustico in Prince Edward Island.



The church spire dominates the Quebec village of St. Simeon on the north shore of the St. Lawrence River.

The St. Lawrence River and the five Great Lakes—Superior, Huron, Michigan, Erie and Ontario—provide a natural waterway into the heart of the continent and make possible a concentration of industrial enterprise at populous inland ports throughout its entire length of more than 2,000 miles. Ontario and Quebec share the benefits of the Seaway and also of the St. Lawrence Lowlands. More than half of Canada's people live in this region of fertile fields and orchards and prosperous industrial and commercial centres. They also share the Precambrian shield to the north, with its riches of ore-bearing rock and densely-wooded forest.

The vast central plain, sloping gently from an elevation of 800 feet above sea level at Winnipeg to 3,500 feet at Calgary, provides Manitoba, Saskatchewan and Alberta with mile upon mile of good land where grain, particularly the famous No. 1 hard wheat, is grown. In the northern parts of the prairie provinces, there are vast woods, lakes and rivers.

West of the prairies is the foothills country, ideal for cattle-ranching. Beyond are the Rocky Mountains with two world-famous parks at Jasper and Banff, and there the Great Divide separates the watershed, east and west. Three other mountain ranges—the Selkirks, the Cariboo and the Purcells—are separated by river valleys of which the Okanagan is most famous for its orchards. The coastline is rough and irregular. Only about 10 p.c. of the country is suitable for permanent settlement; the rest is too

A picnic spot in one of Canada's National Parks. This one is equipped with picnic tables, fireplaces, incinerators, rest rooms and shelter from bad weather.



high, too steep or too rocky. The coastal climate is mild, and more than half the population of British Columbia live in Vancouver.

North of the watershed which separates the rivers draining into Hudson Bay from those flowing into the Arctic Ocean lie the Yukon and part of the Northwest Territories. Dominating the geography of the whole area is the mighty Mackenzie River, 2,635 miles in length. At Norman Wells, about 450 miles upstream from the Arctic, it is between two and three miles wide and some 60 feet deep. There are numerous mountains in this area and much of the region is forested, though the tree growth is stunted in the far northern section. On the other side of the watershed, the rest of the Northwest Territories is mainly treeless tundra, with relatively high mountains on Baffin and Ellesmere Islands. To the surprise of many people, the precipitation is light; much less snow falls in the north than in southern Canada. For instance, Yellowknife, N.W.T. has an average rainfall of 5.0 inches and an average snowfall of 34.5 inches, while the averages for Sept Îles, Quebec, are 25.4 inches of rain and 165.5 inches of snow.

In every province, some of the most spectacularly beautiful scenic tracts have been designated as National Parks by the Federal Government. They are equipped with the facilities and services that make them ideal playgrounds in every season of the year for people of every taste. Swimmers have their choice of hot mineral springs in the mountain parks, clear freshwater lakes in the prairie and eastern parks, and salt water in the provinces bordering the Atlantic. Dressing-room facilities are provided, as well as life guards at the main beaches. Some parks have heated outdoor pools.

There are 750 miles of good motor roads in the National Parks and 2,500 miles of well-kept hiking trails. Most of the parks have excellent golf courses, tennis courts, bowling greens, children's playgrounds and other facilities

and many of them preserve forts, battlefields and other historic sites. In three of the National Parks in British Columbia and Alberta, winter sports have been developed on a large scale. Colourful winter carnivals and many championship ski-meets are held.

National park names and areas are as follows:—

<u>Park</u>	<u>Area</u>	<u>Park</u>	<u>Area</u>
	sq. miles		acres
SCENIC, RECREATIONAL AND ANIMAL		HISTORIC— <i>continued</i>	
Wood Buffalo, Alta. and N.W.T.	17,300.0	Fort Amherst, P.E.I.	222.0
Jasper, Alta.	4,200.0	Fort Lennox, Que.	210.0
Banff, Alta.	2,564.0	Fort Beauséjour, N.B.	81.3
Prince Albert, Sask.	1,496.0	Fort Prince of Wales, Man.	50.0
Riding Mountain, Man.	1,148.0	Fort St. Joseph, Ont.	47.0
Kootenay, B.C.	543.0	Halifax Citadel, N.S.	36.9
Glacier, B.C.	521.0	Fort Battleford, Sask.	36.7
Yoho, B.C.	507.0	Fort Anne, N.S.	31.0
Cape Breton Highlands, N.S.	367.2	Port Royal, N.S.	20.5
Waterton Lakes, Alta.	203.0	Grand Pré, N.S.	14.0
Terra Nova, Nfld.	156.0	Cartier-Brébeuf, Que.	14.0
Mount Revelstoke, B.C.	100.0	Alexander Graham Bell Museum, Baddeck, N.S.	14.0
Fundy, N.B.	79.5	Lower Fort Garry, Man.	13.0
Elk Island, Alta.	75.0	Woodside, Ont.	12.0
Prince Edward Island, P.E.I.	7.0	Fort Langley, B.C.	9.0
Point Pelee, Ont.	6.0	Fort Wellington, Ont.	8.5
Georgian Bay Islands, Ont.	5.4	Fort Malden, Ont.	8.0
St. Lawrence Islands, Ont. (acres)	172.0	Fort Chambly, Que.	2.5
HISTORIC		Fort Moncton, N.B.	2.1
Fortress of Louisbourg, N.S.	339.5	Batoche Rectory, Sask.	1.3
Signal Hill, Nfld.	243.4	St. Lin, Que.	1.0

Provincial parks, too, offer a wide choice of vacation pleasures. For the motorist, there are hundreds of roadside parks, equipped with tables and benches, cooking facilities and good water. These are usually chosen for their beautiful view or some special attraction, such as a bathing beach.



This panoramic view of Vancouver at night can be obtained by taking a 30-minute chairlift ride up Grouse Mountain.

Growth of the Nation

When the European explorers of the fifteenth and sixteenth centuries discovered the eastern portions of what is now Canada, they knew what they were looking for, but it was not a new land. Excited by the trickles of spices and silks and of other exotic products of the Far East which had reached their countries, merchants and kings of Europe encouraged the search for a sea route to China so that an exchange of trade could be established which would bring them the luxuries of the East. For more than a century after John Cabot made a landfall in 1497, on the coast of either Newfoundland or Cape Breton Island, explorers continued to probe into the waterways of this strange country, which offered them not spices and silks but fish and furs, in the slowly dying hope that there was a northwest passage which would lead them to the Pacific.

It was not until the end of the sixteenth century, when the profits to be derived from barter with the Indians and the import to Europe of furs (especially beaver for the hat-makers) had been established, that the rulers of France, having financed expeditions to the New World for more than 60 years, were persuaded that France should make a monopoly of the fur trade and, to accomplish this, embark on a program of colonization. In 1598, Henry IV of France appointed the Marquis de la Roche Viceroy and Lieutenant-General of the new lands with a monopoly of the fur trade and authority to confiscate the vessels of any who should attempt to trade without his permission. The first efforts at settlement were not serious attempts at colonization; groups were left in Canada to winter and to collect furs from the Indians, but they were repatriated the following year.

It was in 1605 that Poutrincourt established the first settlement intended to be permanent at Port Royal in Acadia, part of present-day Nova Scotia. He began an agricultural program and brought out his son Charles de Bien-court, who later devoted all his energies to the cause of French expansion in Acadia. Meanwhile, however, the English were settling in what is now the Atlantic coastal region of the United States of America and a raiding party, under Samuel Argall of Virginia, burned Port Royal to the ground as part of a campaign to drive out the Jesuits and establish control over the cod fishery.

In 1621 King James I of England gave Acadia to Sir William Alexander as a proprietary colony under the name of Nova Scotia and, as an encouragement to settlement, created an order of baronets. Alexander's two attempts at colonization were failures, but Nova Scotia still has its own coat of arms, its own tartan and its name, derived from "New Scotland".

Samuel de Champlain, who had first visited the St. Lawrence River in 1603, decided to establish a settlement to control the fur trade along the St. Lawrence River and to serve as a base for his further explorations along the waterways of which he had heard so much. He chose the Indian village of Stadacona, now Quebec City, and there in 1608 he built his first permanent North American settlement, three small two-storied buildings and a warehouse. That winter eight men out of 24 survived to see the spring.

Perhaps it is to the vision, determination and fortitude of Champlain more than any other that Canadians must give credit for the initial founding of their country. Through political manipulation, terrible hardships of



Sir Humphrey Gilbert claims Newfoundland for Elizabeth I, August 5, 1583.

climate and sickness, his personal capture by the British and fluctuating support from France, Champlain remained resolute and indefatigable. When he died in 1635, the man who became known as the Father of New France had the satisfaction of seeing his trading post become a colony, the nucleus of the French Canadian way of life so important in Canada today.

The first formal organization of government was introduced to New France in 1663. Until then the colony along the St. Lawrence had been loosely governed by a series of commercial companies chartered by the King. In 1663 Louis XIV, borrowing from the system of royal government already operative in the provinces of old France, appointed a governor, an intendant (an administrative officer) and a bishop whose duty it was to supervise the religious and moral life of the colony. There was also a Superior Council, intended to act as a check on the powers of the governor, the intendant and the bishop, and all were directly responsible to the King of France.

The seigneurial or feudal system of land holding had been introduced to New France even prior to the establishment of royal government. Under this system, the King granted land to the seigneur who, in turn, split it up among habitants for working. More than 200 of these large estates or seignories were marked off on both sides of the St. Lawrence, the Richelieu and the Chaudière Rivers. Early settlers insisted on having a river frontage for their farms; soon the practice of subdividing the parent farm for the sons resulted in such narrow holdings that a royal edict prohibited the erection of a farm-house on a frontage of less than one and a half arpents—about 100 yards. Many of these farms are still being worked today, as passengers on the ships plying the St. Lawrence may easily observe. Thus early in his

history, the French Canadian put down roots into the Canadian soil. Another factor, the division of New France into 82 Roman Catholic parishes, with the consequent close relationship between the parish priest and the handful of local habitants, accelerated the adaptation of immigrants and settlers to their new home.

For more than a century these roots spread and grew deeper, so that by 1760, when the British defeated the French in the North American salient of the Seven Years War, the 60,000 French Canadians became British citizens without having to surrender their homes, their language, their religion or their way of life.

Had it not been for that century of peaceful agricultural settlement, blessed by seigneur and priest, the French settlers of the St. Lawrence might have suffered the same fate as those of Acadia. In 1713, under terms of the Treaty of Utrecht, Acadia was given to the British, leaving Isle St. Jean (Prince Edward Island) and Isle Royale (Cape Breton Island) to the French, who then exerted great pressure on the Acadians to leave British territory and resettle in French. But the Acadians had put down their own roots and very few of them moved; indeed, they demanded neutral status in any Anglo-French war or conflict with the Indians. The British insisted that the Acadians accept the full obligations of British subjects and take the oath of allegiance. They refused, protesting their neutrality, and in 1755 about 6,000 of them were rounded up in Nova Scotia and distributed among the American colonies, some to become the "Cajun" of southern United States; 3,500 were deported to France from Prince Edward Island.

After the British conquest which ended the period of arbitrary, paternalistic government by France, Canada was governed by a military regime from 1760 until 1763. Following the Peace of Paris, the Proclamation of 1763 provided for a governor and a council, directly responsible to the King



Since the 17th century, ship-building has been an important Canadian industry. In the days of New France, ships were built for the French Navy; since then, Canadian shipyards have built a great variety of ships, including a replica of H.M.S. *Bounty* for a Hollywood film in 1960.



This photograph, taken nearly 100 years ago, shows the Fathers of Confederation at their first meeting in Charlottetown in 1864 the month before the Quebec Conference. Sir John A. Macdonald, Canada's first Prime Minister, is seated in the middle of the picture.

of England, and authority was given for the calling of an assembly; none, however, was ever called.

Representative institutions in the form of elected assemblies were introduced into Nova Scotia in 1759 and New Brunswick on its creation in 1784; in 1791 the Constitutional Act divided the St. Lawrence Valley into Upper and Lower Canada and gave each province representative institutions without responsible government. Executive power was in the hands of a governor and an executive council appointed by the Crown; the legislature consisted of a legislative council appointed by the Crown and a legislative assembly elected by the people. The elected members depended for the passing of any legislation they might introduce on the concurrence of the legislative and executive councils and, to meet this difficulty, there grew up in each province a governing class or clique—known in Upper Canada as the Family Compact, in Lower Canada as the Chateau Clique, and in Nova Scotia as the Council of Twelve—which normally controlled the executive government and which, by its control of nominations to the Legislative Council, was able to impose a veto on legislation as well.

This period of representative institutions without responsible government continued for over 50 years, but not without opposition from many quarters. The pressure of reformers for an elected legislative council and for control of public funds by the legislature were met with stern repressive measures and when, in addition to political unrest, crop failures for two successive years and a world-wide financial panic and depression jeopardized the country's economy, armed but abortive rebellions led in Lower Canada by Louis Joseph Papineau and in Upper Canada by William Lyon Mackenzie broke out in 1837. Strangely enough, many of the leaders of the rebellions lived to take part in public life, four of them as prime ministers; the grandson of William Lyon Mackenzie became the prime minister of Canada who established a record for length of service—21 years—unsurpassed anywhere else in the Commonwealth.

In 1838, the year after the rebellion, Lord Durham was sent from England to study the situation. In his famous *Report on the Affairs of British North*

America, he recommended not only the reunion of Upper and Lower Canada as one province under a single legislature, but also the introduction of responsible government into the colonies in matters of internal or colonial concern; that is, he would have the internal government of the colonies placed in the hands of the colonists themselves and the executive officers made responsible or subordinate to the elected legislature. On the other hand, he thought it possible to reserve four important matters of governance for imperial control: the constitution of the form of government; foreign relations; trade with the mother country, other British colonies and foreign nations; and the disposal of public lands.

In 1841 Upper and Lower Canada were united, but the two provinces had equal representation in the assembly, rather than representation by population as Lord Durham had recommended. The machinery of responsible government was set up, but it was not until 1848, under a new Governor General, Lord Elgin, that it was finally achieved when he appointed his Executive Council or cabinet from the majority party in the Legislative Assembly.

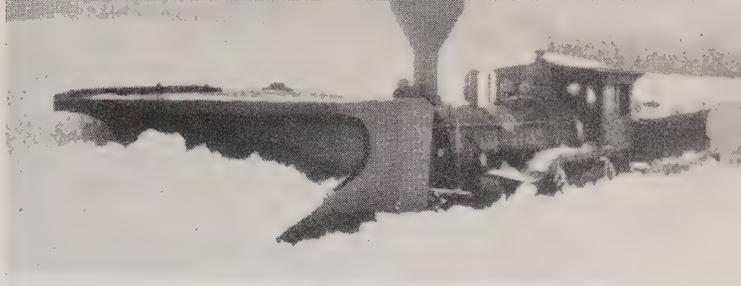
When the Act of Union (1841) was passed, Lower Canada's French population was larger than the English population of Upper Canada; within a decade, British immigration had reversed this situation, giving rise to a demand for representation by population from Upper Canada. Bitternesses developed and it was not long before government came to an impasse, no government being able to command a majority in both parts of the united province. Between 1861 and 1864 there were four ministries formed and two general elections held, yet without decisive result.

Meanwhile economic problems had developed. In 1865, the ten-year Reciprocity Treaty with the United States expired. Britain had adopted free trade, depriving Canada of its preference in the British market and making imperative extensions of intercolonial trade. This was seriously hampered by a lack of transportation facilities; railways were urgently needed to connect the Maritime ports with Montreal or Quebec, to facilitate settlement and trade in the western prairies and to join British Columbia to the rest of Canada. Gold had been discovered in the Fraser River and the



Lumbermen working on the Ottawa River in the late 1800's were served lunch on a raft.

Even the snowplough could get stuck in a drift in 1878.



Caribou country (1858) and there was a movement in favour of annexation to the United States, as many of the colonists on the West Coast were Americans and were geographically isolated from the Canadian East.

These were among the many and cogent reasons for uniting the provinces of British North America in a federal state. On October 10, 1864 the famous Quebec Conference of representatives of the four Atlantic provinces and the province of Canada met and framed the Seventy-two Resolutions embodying the basis of confederation; in 1867 the British Parliament passed the British North America Act under which Ontario, Quebec, Nova Scotia and New Brunswick were united in a federal union under the name of Canada. A federal government was created with headquarters in Ottawa and the separation between federal and provincial jurisdiction was delineated.

In 1870 Manitoba entered Confederation, followed by British Columbia in 1871, Prince Edward Island in 1873, Alberta and Saskatchewan in 1905 and Newfoundland in 1949. In 1880, Canada took over from Britain the islands of the Arctic Archipelago.

Since 1867, the Canadian government has gradually assumed full responsibility for Canadian affairs. Independence in foreign policy was achieved during the First World War when Canada assumed membership in the Imperial War Cabinet, sent delegates to the peace conference at Versailles and became, in its own right, a member of the League of Nations. In 1931, the Statute of Westminster gave Canadian sovereignty final recognition: it ruled that no law of Canada can be voided because it is repugnant to British law; no law of Britain remains effective in Canada except by Canadian consent; all laws enacted by Canada have extraterritorial effect. In 1947 Canadian citizenship was defined as distinct from British citizenship; in 1949 Canada obtained authority to amend the BNA Act as to matters within federal jurisdiction and appeals to the Imperial Privy Council's Judicial Committee were abolished; in 1952 a Canadian was appointed Governor General.



Laying the first transcontinental railway during the 1880's was a political necessity and an engineering achievement. For hundreds of miles the roadbed had to be blasted out of rock.



A trainload of harvesters arriving at Winnipeg from eastern Canada in 1887.



Economically, the development of Canada was fraught with obstacles. The fantastically difficult feat of building a transcontinental railway along the north shore of the Great Lakes, across the vast prairies and through the Rocky Mountains was at last achieved in 1885, not without financial problems as great as the engineering ones.

Settlement of the western lands was encouraged by the homestead scheme inaugurated in 1872. The land was divided into sections each a mile square and containing 640 acres. Free homestead grants were made of quarter-sections to anyone who would occupy and develop them for three years. For some years development was slow because there was free land for the taking in the United States, but by the end of the century that supply of frontier land was exhausted and, stimulated by an aggressive immigration policy, settlers began to surge into the country. This resulted in a phenomenal development in the agricultural economy and an attendant flowering of interprovincial and international trade. Not only wheat, but timber and wood pulp, nickel and copper, meats and dairy products, began to be exported in quantity. British and American capital flowed into the country and manufactures tripled in value between 1890 and 1910.



The first steam threshing outfit in the Ottawa Valley arrived in Renfrew, Ont., in 1890.

In the wake of these developments, the pace of industrial progress quickened. As early as 1871, a handful of small businessmen, meeting in Toronto, founded the Canadian Manufacturers' Association, dedicated to promote the growth of home industry, a policy endorsed eight years later by the electors when, in the general election of 1879, they approved "The National Policy" of protective tariffs to encourage domestic processing of Canadian raw material.

Newly established factories processing various by-products of lumber, wheat and animals for home consumption survived and prospered even during the period of economic depression which marked the late 1870's and early 1880's. By 1900, manufacturing had developed to the point where it employed slightly more than 15 p.c. of the labour force.

The development of manufacturing, rooted as it was—and is—in Canada's great wealth of natural resources, gained new impetus in the first years of the twentieth century as hundreds of thousands of immigrants poured in from Britain and Continental Europe. The discovery of electricity and the harnessing of a small part of Canada's vast reserves of hydro-electric power provided industry with a cheap and efficient source of energy. Other technological developments, inventions and innovations served to stir fresh interest in Canada's growth potential, as men came to realize the vast storehouse of mineral wealth which lay within the Canadian Shield. All this—the influx of people and capital, the opening up of the West, the cheapness of hydro-electric power, improved communications and transportation at lower cost as a result of expansion of railway, highway and waterway, the abundance and quality of wheat and lumber production—sped the development of secondary industry.

For Canada, then, the first twenty years of the twentieth century was a period of unprecedented expansion. The world-wide depression of the early 1930's halted industrial progress in Canada, as in other countries, for several years and reduced economic activity to its lowest point.

When war broke out in 1939, Canadian industry again responded to a flood of military orders and expanded and diversified at a dramatic rate. Manufacturing forged ahead and by the end of the War was employing well over 1,000,000 workers, more than 25 p.c. of the labour force.

The spectacular nature of manufacturing expansion since 1939 has committed Canada, decisively and irrevocably, to an industrial future. In fewer than twenty years the number of manufacturing establishments increased by more than 50 p.c. and the total number of workers in the industry by more than 100 p.c., as compared with a mere 10 p.c. increase in each case in the twenty-year period between the first and second world wars.

This post-1939 transformation of the economy has made Canada, for all her small population, one of the leading industrial and trading nations of the world. The traditional conception of Canada as primarily an agrarian and rural country has lost all validity. Technological progress, increased efficiency and improved productivity having vastly reduced agriculture's dependence upon manpower in favour of the machine, the hands and skills thus released have found employment in the more than 10,000 new manufacturing plants that have been built since 1945 in or near the cities and towns of Canada's ten provinces. Canada, in the process, has become a predominantly industrial and urban society.

The Canadian People

There are three distinct types of Canadians: those whose origins are buried in antiquity—the native Indians and Eskimos; those who were born in Canada, some of whom have English as their first language, and some of whom claim French as their mother tongue; and those who were born outside Canada and have voluntarily transferred their national allegiance to their new homeland. In addition, there are recent arrivals who have not yet acquired Canadian citizenship. Numerically, the native people constitute a small fraction of the total population which is estimated, as of January 1, 1961, to be over 18,000,000, and are comprised of about 180,000 Indians and about 11,500 Eskimos. About 83 p.c. of Canada's population in 1959 was estimated to have been born in Canada.

There have been four main waves of immigration to Canada, following the slow and painful settlement of the country by French fur traders, *coureurs-de-bois*, explorers and missionaries and British soldiers, colonial officials and merchants. The first surge of population arose from the American Revolution which ended in 1783 and which added perhaps 40,000 British Loyalist refugees. This wave of settlers flowed north into the area which, in 1784, became New Brunswick and west along the St. Lawrence River to found villages and open up farmlands in what, in 1791, became Upper Canada and is, today, Ontario.

Shortly after the turn of the century, the commercial possibilities of the Canadian forests were discovered. In that age of sail, the British ship-builders offered a lively market for ship timber and masts and ship-owners encouraged emigration by offering low transatlantic fares to provide a revenue for the east-west passage. Much of the 19th century was marked by years of poverty and industrial dislocation in the British Isles and reports from the New World were charged with optimism. During the years from 1821 to 1861, the population increased from 750,000 to 3,229,633. In the decade 1851-61 alone, it increased by 790,000.

The discovery of the resources of the rocks and the plains stimulated the next surge of population. By 1900, the prairie had been broken to the growing of wheat, the riches of the Precambrian Shield had begun to be appreciated, gold had been discovered in the Cariboo and the Yukon and a transcontinental railway threaded its way from coast to coast. Farmers, ranchers and miners and those who provide services to new communities poured into the country; the population increased from 5,371,315 in 1901 to 7,206,643 in 1911—an unprecedented increase of nearly 35 p.c. In 1913 alone, more than 400,000 immigrants arrived at Canadian shores or crossed the U.S.-Canadian border. Between 1901 and 1911 nearly 300,000 settled in the West which recorded a population increase of 169 p.c., but the search for precious minerals in northern Ontario attracted newcomers so strongly that the population of Timiskaming County swelled by more than 2,000 p.c., from 1,252 to 26,592.

Following the First World War there was another small wave of immigration which died away during the depressed thirties. But following the Second World War, peace brought prosperity, for Canada had established itself as a great industrial power and an important world trader. For economic



Every year about 3,000,000 people, the equivalent of one of every six Canadians, roam the grounds of the Canadian National Exhibition, the world's largest annual fair.

reasons, Canada attracted Europeans faced with a slow and painful rebuilding, not only of their industries and farms, but of their way of life. Canada's political stability was also an attraction to many seeking a secure environment in which to bring up their families. The population increased by almost 22 p.c. between 1941 and 1951, and by 14.8 p.c. between 1951 and 1956, the largest absolute increase in any five-year period in Canadian history.

While immigration was an important factor in the post-war growth of Canada's population, there was another, even more important. The marriage rate, which started to rise during the war, remained at a remarkably high level throughout the post-war years and the average age at marriage was somewhat lower. This together with a marked increase in third and fourth births per mother, brought about a phenomenal increase in the child population; as a result, the natural increase in population between 1951 and 1956 accounted for more than 70 p.c. of the total increase. The number of children under 15 increased by 22.9 p.c., while the total population increased by only 14.8 p.c. Between 1956 and 1960, the number of children increased by 14.4 p.c., while the total population showed a 10.8 p.c. increase.

The Canadian census is taken every ten years, and a partial census was taken in 1956. Official estimates of the population of Canada are made at various intervals throughout each year; that of September 1, 1960 gave a total of 17,930,000, with an estimate of 18,000,000 by mid-November. By June 1, 1961, when the next decennial census is taken, Canada's population may total 18,250,000.



Population Growth, by Province, for Census Periods 1901-60

Province	1901	1911	Change 1901-11	1921	Change 1911-21	1931	Change 1921-31
	No.	No.	p.c.	No.	p.c.	No.	p.c.
Newfoundland.....	—	—	—	—	—	—	—
Prince Edward Island....	103,259	93,728	-9.2	88,615	-5.5	88,038	-0.7
Nova Scotia.....	459,574	492,338	7.1	523,837	6.4	512,846	-2.1
New Brunswick.....	331,120	351,889	6.3	387,876	10.2	408,219	5.2
Quebec.....	1,648,898	2,005,776	21.6	2,360,510	17.7	2,874,662	21.8
Ontario.....	2,182,947	2,527,292	15.8	2,933,662	16.1	3,431,683	17.0
Manitoba.....	255,211	461,394	80.8	610,118	32.2	700,139	14.8
Saskatchewan.....	91,279	492,432	439.5	757,510	53.8	921,785	21.7
Alberta.....	73,022	374,295	412.6	588,454	57.2	731,605	24.3
British Columbia.....	178,657	392,480	119.7	524,582	33.7	694,263	32.3
Canada¹.....	5,371,315	7,206,643	34.2	8,787,949	21.9	10,376,786	18.1

	1941	Change 1931-41	1951	Change 1941-51	1956	Change 1951-56	1960 ²	Change 1956-60
	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.
Newfoundland.....	—	—	361,416	—	415,074	14.8	459,000	10.6
Prince Edward Island.....	95,047	8.0	98,429	3.6	99,285	0.9	103,000	3.7
Nova Scotia...	577,962	12.7	642,584	11.2	694,717	8.1	723,000	4.1
New Brunswick	457,410	12.0	515,697	12.7	554,616	7.5	600,000	8.2
Quebec.....	3,331,882	15.9	4,055,681	21.7	4,628,378	14.1	5,106,000	10.3
Ontario.....	3,787,655	10.4	4,597,542	21.4	5,404,933	17.6	6,089,000	12.7
Manitoba.....	729,744	4.2	776,541	6.4	850,040	9.5	899,000	5.8
Saskatchewan..	895,992	-2.8	831,728	-7.2	880,665	5.9	910,000	3.3
Alberta.....	796,169	8.8	939,501	18.0	1,123,116	19.5	1,283,000	14.2
British Columbia....	817,861	17.8	1,165,210	42.5	1,398,464	20.0	1,606,000	14.8
Canada¹..	11,506,655	10.9	14,009,429	21.8	16,080,791	14.8	17,814,000	10.8

¹Includes the Yukon and Northwest Territories.

²Estimated as of June 1.

Canada's population growth has by no means been evenly distributed among the provinces. While British Columbia's population increased at double the Canadian rate or by more than 70 p.c. between 1941 and 1956 and the population of Quebec, Ontario and Alberta each by about 40 p.c., Saskatchewan's population actually declined. The uneven rates of increase among the provinces imply a pattern of internal migration reinforcing the natural growth in British Columbia and, to a lesser degree, in Ontario but depressing the growth in the other provinces below what might have been expected from natural increase alone.

In addition to these interprovincial shifts there have been decided movements within each province from rural to urban areas. This shift is by no means a new phenomenon. It has been under way since before the turn of the century and is, of course, a reflection of the steady decline in the importance of employment in agriculture compared with that in manufacturing, trade and services. At the beginning of the present century, 45 p.c. of the male labour force was employed in agriculture as compared with about 33 p.c. at the time of the 1941 Census. For the twenty years between 1921 and 1941 the number of males employed in agriculture remained fairly stable at around 1,000,000 but by 1951 it had declined by 270,000. Since 1951 the number has continued downward so that the proportion of males employed in this industry is now less than 20 p.c. of the total male labour force.

Rural-Urban Population Change, by Province, 1951-56

Province or Territory	Rural			Urban		
	1951 ¹	1956	Change 1951-56	1951	1956	Change 1951-56
	No.	No.	p.c.	No.	No.	p.c.
Newfoundland.....	207,057	229,822	11.0	154,359	185,252	20.0
Prince Edward Island....	73,744	68,815	-6.7	24,685	30,470	23.4
Nova Scotia.....	287,236	295,623	2.9	355,348	399,094	12.3
New Brunswick.....	296,228	300,326	1.4	219,469	254,290	15.9
Quebec.....	1,340,340	1,387,540	3.5	2,715,341	3,240,838	19.4
Ontario.....	1,221,717	1,302,014	6.6	3,375,825	4,102,919	21.5
Manitoba.....	336,961	339,457	0.7	439,580	510,583	16.2
Saskatchewan.....	579,258	558,662	-3.6	252,470	322,003	27.5
Alberta.....	489,003	487,292	-0.5	450,498	635,824	41.1
British Columbia.....	340,466	371,997	9.3	824,744	1,026,467	24.5
Yukon and N.W.T.....	19,782	24,388	23.3	5,318	7,115	33.8
Canada.....	5,191,792	5,365,936	3.4	8,817,637	10,714,855	21.5

¹ Areas for 1951 adjusted to 1956 boundaries.

During the 15 years 1941-56 the population residing in metropolitan areas increased by 55 p.c. which may be compared with the 40 p.c. increase in the total number of people in the country. The 'metropolitan community' is usually considered a creation of the twentieth century, though urbanization was well under way in the late 1800's. Metropolitan communities—like urban centres—cannot be defined in terms of numbers, but a review of rates

of growth and changing proportions is extremely enlightening, since the development of the metropolitan community seems inevitably to involve a process of relative population deconcentration. One of the most simple indications of metropolitan emergence is rapid population growth at the periphery of large cities. At the time of the 1956 Census there were 6,282,000 persons residing in the fifteen metropolitan areas of Canada, accounting for 40 p.c. of the total population and close to 60 p.c. of the urban population. In the five-year period between 1951 and 1956, about half the increase in the total population of Canada occurred in these fifteen metropolitan areas.

Population Increase in Metropolitan Areas, 1951 and 1956

Metropolitan Area	1951 ¹	1956	Increase		
			Metro- politan Area	City Proper	Fringe Area
			No.	No.	p.c.
Calgary.....	140,645	200,449	42.5	40.8	61.1
Edmonton.....	173,748	251,004	44.5	41.6	77.1
Halifax.....	133,931	164,200	22.6	9.0	46.7
Hamilton.....	272,327	327,831	20.4	15.0	37.8
London.....	128,977	154,453	19.8	6.7	56.9
Montreal.....	1,395,400	1,620,758	16.2	8.6	36.8
Ottawa.....	292,476	345,460	18.1	9.9	36.4
Quebec.....	274,827	309,959	12.8	4.1	25.7
Saint John.....	78,337	86,015	9.8	3.4	21.6
St. John's.....	67,313	77,991	15.9	8.0	44.8
Toronto.....	1,117,470	1,358,028	21.5	-1.2	56.3
Vancouver.....	561,960	665,017	18.3	6.1	37.8
Victoria.....	108,285	125,447	15.8	6.3	24.4
Windsor.....	163,618	185,865	13.6	1.6	46.6
Winnipeg.....	354,069	409,121	15.5	8.2	30.1
Totals.....	5,263,383	6,281,598	19.3	9.0	41.7

¹ Areas for 1951 adjusted to 1956 boundaries.



Quebec City, site of the first permanent settlement in Canada, was founded by Champlain in 1608. The only walled city in North America, it preserves its ancient Citadel as the official residence of the Governor General during the month of September.



The Canadian Family

Most people think of a family as a group of blood relatives of all generations. When it comes to counting families, however, the unit must be given a more precise definition. Under the definition of the family by which the Canadian census counts heads, it is a resident rather than a biological unit. It consists of one or more parents with or without unmarried children under 25 living at home, or even of an adult and a child for whom he or she is responsible. A household consisting of a married couple living with the parents of one of them would comprise, according to this definition, two families. Thus the size of the average Canadian family, which is less than four persons, reflects the limitations of the definition, and obscures the very real increase in the size of Canadian families during the last decade.

Of the estimated 4,038,000 families, comprising 15,588,000 people, in the ten provinces of Canada in 1959, 3,701,300 families, comprising 14,612,700 people, were composed of both a husband and a wife living together, with or without children. The size of these families varied from an average of 3.6 in British Columbia to one of 4.5 in Quebec.

A small proportion of Canadians—10.5 p.c.—are not, statistically speaking, members of families, though many of them live with relatives, and, with them, make up a household, which is defined as a person or persons, related or not, living together in an independent residential unit, be it house, flat or apartment.

There are 4,404,000 households in the ten provinces of Canada. More than two-thirds of the heads of these households own their own homes; the remainder live in rented premises. Canadians prefer to live in houses; only one in four households lives in an apartment or a flat. If one could look into all these homes it would be easy to assess the standard of living of Canadian households, for there are radios in 96 p.c. of them, refrigerators in 91 p.c., washing machines in 87 p.c., telephones in 83 p.c., baths or showers in 77 p.c., television sets in 81 p.c., sewing machines in 69 p.c. and vacuum cleaners in 68 p.c. Outside the house, 67 p.c. of households have a passenger car,—in fact, 7 p.c. have two or more. The popularity of the home freezer is attested to by the fact that one in nine households owns one.



With one woman of every four of working age in the labour force, and 45 p.c. of working women housewives, labour-saving equipment and house designs are in great demand.

Inside all these households, there are people of all ages. Canadians under 20—7,137,800 of them—greatly outnumber those between 20 and 40, who total 4,887,300. There are 3,546,700 people between 40 and 60, and 1,870,200 over 60. Just over half—50.7 p.c.—are males.

In 1959, Canadians spent \$16,284,000,000 in retail trade—an average of \$905 for every man, woman and child. Of every dollar they spent, 20.6 cents went for food, 16 cents for motor vehicles, (of which 9.4 cents went toward the purchase of a new car), 8.9 cents on clothing and shoes, 2.6 cents on hardware and 4.9 cents on furniture and household appliances.

During 1959, the average housewife bought a 24-oz. loaf of bread for 23 cents, a pound of coffee for 75 cents, of tea for \$1.19, of flour for 8 cents, of butter for 70 cents and of lard for 19 cents. She paid 54 cents a dozen for eggs, 5 cents a pound for potatoes, 23 cents a quart for milk and 45 cents a dozen for oranges. Bacon was 86 cents a pound, cheese 73 cents, bologna 44 cents, sirloin steak \$1.01 and stewing beef 67 cents. The flow of European immigration since the Second World War has brought an unexpected boon to the country as a whole in that it has stimulated the import to Canada and the manufacture in Canada of many interesting foods formerly unknown or classed as infrequent luxuries.

Births, Marriages and Deaths. About four-fifths of Canada's annual population growth currently is the result of the excess of births over deaths, the other fifth being contributed by net migration. For example, during

Supermarkets, often units in a chain of stores, are popular for family shopping.



1959 479,275 infants were born alive—at the rate of almost one a minute—while 139,913 deaths occurred during the year, leaving a net natural increase of over 339,000 persons, or the equivalent of 19.5 persons for every 1,000 in the population.

Although the actual number of births has increased steadily from about 250,000 per year in the 1920's to close to 500,000 at the present time, the birth rate (per 1,000 total population) has fluctuated widely during the past 40 years. During the 1920's and 1930's the rate dropped gradually from a high of 29.3 in 1921 to a low of 20 to 21 during the four years preceding World War II. During the war years the rate stood at 23-24 and since the War has ranged between 27 and 29 and stood at 27.5 in 1959, one of the highest among the industrialized nations of the world.

Searching birth indexes in a provincial vital statistics office. Certificates of birth are issued from the capital city of the province in which the birth occurred.



Among the ten provinces Newfoundland had the highest birth rate in the country in 1959 at 33 per 1,000 population, followed by Alberta at 30.6, Quebec at 28.5 and New Brunswick at 27.9; rates for the other provinces ranged from a low of 25.5 in British Columbia to 27 in Saskatchewan.

In the early 1940's at the beginning of the 'baby boom', one out of three babies born alive in Canada was the first child born to the family. But the picture has now changed and in 1959 nearly 33 p.c. of the babies born were fourth or later children born to the family, 18.2 p.c. were third-born, 24 p.c. were second-born and less than a quarter were first-born.

Canada's marriage rate at 7.6 per 1,000 population in 1959 was the lowest rate experienced since the year 1936. During the 1920's Canada's marriage rate varied between 6.9 and 7.9 per 1,000 population but sank to a low of 5.9 in 1932 after which there was a gradual rise. The early war years brought a

concentration of marriages which it is claimed were 'borrowed' both from the past and the future, in that they included marriages postponed during the depressed thirties and subsequently made possible by wartime prosperity and other cases where the date may have been advanced because of impending departure overseas. There was a sharp drop during the later years of the war and this in turn was reversed in 1946-47. There has been a gradual decline since that year but the current rate remains slightly above the rates of the 1920's and 30's. During the past 4 years the number of marriages solemnized in Canada each year has averaged 132,500.

Canada has been in the forefront of industrial nations during the 20th century as far as health is concerned, although improvement in health has been world-wide in recent years. Shortly before 1900, health research entered the so-called bacteriological era when the primary concerns were the identification and classification of communicable diseases, their modes of transmission and control methods. Within a lifetime, the communicable diseases have been virtually eliminated as leading causes of death in Canada. The major causes of death to-day are degenerative conditions or diseases associated with advancing age, cancer, and accidents, with the result that a smaller number of such leading causes account for an increasing proportion of all deaths.

However certain diseases still take a heavy toll at different stages of life. Congenital conditions and immaturity are the major causes of death in in-

More than 93 p.c. of Canadian babies are born in hospital and in eight provinces (other than Quebec and New Brunswick) the proportion is over 98 p.c. The advent of hospital insurance in these provinces has contributed to this practice and it is expected that it will affect the figures for the other two provinces. Nurseries like this, with an outer scrub room and high plate glass separators between bassinets, have been built in many hospitals with the assistance of federal health grants.





The housing needs of the increasing number of older people in the population are being met by many types of housing projects. These are self-contained apartments in small building units.

fancy, accidents in youth, and circulatory disorders and cancer among middle-aged and old persons. Accidents rank as the leading cause of death for both males and females in the age group 5-19 years and for males in the age group 20-44 years. Although tuberculosis is far from being a major cause of death for the population as a whole at the present time, it is however the fifth leading cause of death for males in the age group 20-44. Cancer is the leading cause of death for females between 20-44 while in all groups except pre-school children it is the second or third major cause of death. In the age groups above 44 years cardiovascular disease is always the leading cause of death.

Declining mortality has drastically affected many of the conditions of family life. It has meant not only increased chances of survival for people of all ages, a longer life expectancy and hence an increased population at all ages, but it has also affected such interacting factors as the age at which persons marry, the duration of their marriage and the eventual number of their children, the age at which children become independent and self-supporting and even the period of orphanhood and widowhood. For example, couples are marrying at younger ages than formerly and reductions in death rates indicate that there is much less chance today than formerly that a man entering marriage will die during the period of his greatest family responsibility, that is, before the marriage of his youngest child. Again, the present greater likelihood of survival to middle and old age has increased the average length of married life and markedly reduced the chances of orphanhood for children. However, because mortality has declined more for women than men, there has been an increase in the chances that a wife will outlive her husband and possibly that her period of widowhood will be lengthened.



Life Expectancy. Gains in life expectancy provide a dramatic, though artificial, yardstick of improving health conditions. Between 1931 and 1956 life expectancy at birth increased from 60 to 67.6 years for males and from 62 to 72.9 years for females. The increases have been predominantly at the younger ages, particularly in infancy, and have diminished with advanced age. For example, while 7.6 years have been added to the life expectancy of a newborn male since 1931, over three years have been added to that of a five-year-old, over two years to a 20-year-old, over three-quarters of a year to a 40-year-old and a bare quarter-year to a 60-year-old male. During the same period, 10.8

years were added to the life expectancy of a newborn female, a five-year-old female gained over 7 years, a 20-year-old 6 years, a 40-year-old 3.7 years and a 60-year-old just over 2 years. Thus longevity has improved for both sexes but more so and at all ages for females, whereas there has been only slight improvement for males beyond middle life. Relatively stationary death rates have been established from about 50 years of age onwards for males and from about 80 for females.

Life expectancy figures also show interesting regional variations. In 1956 the Prairie Provinces had the highest expectation of life at birth for both males and females. A boy born in the Prairie Provinces could, on the average, expect to live over a year longer than one born in British Columbia, about a year and a half more than one born in the Atlantic Provinces or Ontario and over three years more than one born in Quebec, whereas for a girl life expectancy at birth ranged from 71 to over 74 years.

The improvement in life expectancy, particularly among children and adolescents, is a result mainly of reduction in mortality from infectious diseases; on the other hand, diseases associated with middle and old age are much less amenable to control. It is therefore unlikely that improvement in life expectancy in the future will be comparable to that of the last two decades.

Births, Marriages and Deaths, 1926-60

(Newfoundland included from 1949)

Year	Births		Marriages		Deaths		Natural Increase	
	No.	Rate ¹	No.	Rate ¹	No.	Rate ¹	No.	Rate ¹
Av. 1926-30.....	236,712	24.1	71,924	7.3	109,164	11.1	127,548	13.0
Av. 1931-35.....	228,591	21.5	68,660	6.5	103,800	9.8	124,791	11.7
Av. 1936-40.....	229,064	20.5	96,931	8.7	109,764	9.8	119,300	10.7
Av. 1941-45.....	277,320	23.5	114,091	9.7	115,572	9.8	161,748	13.7
Av. 1946-50.....	355,748	27.4	126,898	9.8	120,438	9.3	235,310	18.1
Av. 1951-55.....	416,334	28.0	128,915	8.7	126,666	8.5	289,668	19.5
1956.....	450,739	28.0	132,713	8.3	131,961	8.2	318,778	19.8
1957.....	469,093	28.3	133,186	8.0	136,579	8.2	332,514	20.1
1958.....	470,118	27.6	131,525	7.7	135,201	7.9	334,917	19.7
1959.....	479,275	27.5	132,474	7.6	139,913	8.0	339,362	19.5
1960 ²	478,000	26.8	132,000	7.4	138,000	7.7	340,000	19.1

¹Per thousand population.

²Estimated.

The Native Canadians

Two segments of the population, the Indians and Eskimos, are given special attention because they, in point of time and origin, are the most truly Canadian of the country's citizens. The Eskimos differ from the Indians in language and cultural background and live for the most part in separate latitudes. In only four centres—Aklavik and Inuvik near the mouth of the Mackenzie River, Churchill on the west side of Hudson Bay, and Great Whale River on the east side of Hudson Bay—do they share the same community. The treeline is generally the southern boundary for the Eskimo and the northern limit for the Indian.

Indians

At the present time there are more than 180,000 Indians in Canada, grouped into about 600 "bands" and living for the most part on 2,217 tracts of land that have been reserved for their use. These reserves, having a total area of 6,000,000 acres, are scattered across the country from Prince Edward Island in the east to the Queen Charlotte Islands in the west and from southern Ontario north to Aklavik in the Western Arctic. It is believed that when the white man arrived on this continent there were about 200,000 Indians roaming what is now Canada, but half a century ago they had dwindled to fewer than 90,000 and were considered a dying race. Since then, however, health services have drastically reduced infant mortality among them and prolonged life in middle age, so that they are now perhaps the fastest-growing ethnic group in the country.

This portable sawmill, operated by Indians in Northern Ontario, produces lumber to line the log cabins they build for themselves on their own reserves.



The Indians of Canada today form one of the most varied populations on earth. Those living close to non-Indian communities very often follow the same type of existence as their neighbours—farming, working in factories, in offices, or at individual trades—and some are lawyers, doctors, nurses, or teachers. At the other end of the scale are the Indians who have remained in isolated areas and continue to follow a food-gathering type of life not too different from that of their ancestors. In between are a variety of levels of existence, each with its own set of problems. Many Indians both live and work off the reserves and some have become very proficient in certain occupations such as high-steel construction, mining, fishing, boat-building and woods operations, and many live on the reserve but work outside on seasonal projects. But whatever his mode of life or wherever he lives, the Indian is presently caught between two worlds, one representing the old Indian culture with its own thought patterns and attitudes which are quite different from those of the non-Indian, and the other the fast-paced, technological society of the mid-twentieth century.

This Indian chief of the Fort George Band in British Columbia is one of eight women chiefs elected by the members of their bands during 1960. Seventy women serve on Indian band councils. They are keenly interested in improving education, sanitation and housing and have formed more than 160 Homemakers' Clubs.



The Indian Affairs Branch of the Department of Citizenship and Immigration, which is responsible for the administration of matters affecting the welfare of Indians, has set two essential objectives for the next decade—a greater measure of self-responsibility for the people on the reserves, and more help for those who wish to make their livelihood in non-Indian society. But the pace of development must be determined by the Indians themselves and not forced upon them. It is the young people who will decide the future and it is through its educational policy that the Indian Affairs Branch hopes to give the greatest assistance, a policy designed to give every child the best schooling he can absorb. Day and residential schools are provided but recently emphasis has been put on the teaching of Indian children in non-Indian schools so that they may be placed educationally on the same level as other Canadian children and, through association, find integration easier in later years. In the 1959-60 academic year, of the 40,637 Indian children

A seasonal source of income for Indians who live along the St. John River in New Brunswick is the harvesting of fiddleheads, the early shoots of a certain type of fern. Collected in hand-made ash baskets, they are sold in the market and, of recent years, to freezing and canning plants. The supply of this table delicacy is limited and it is consumed almost entirely within the province.



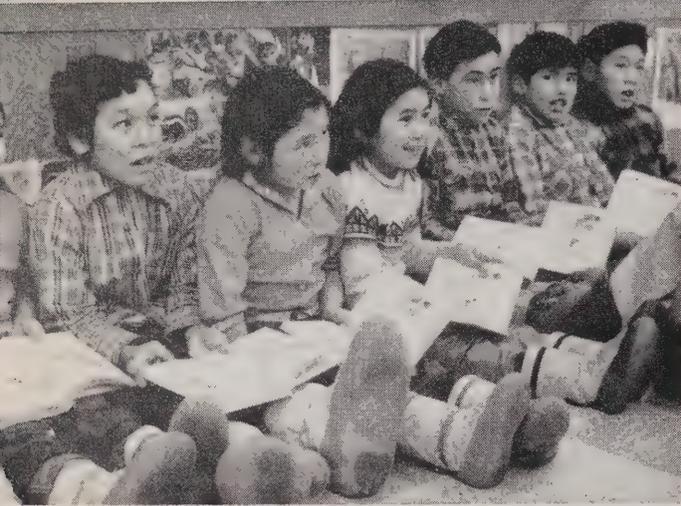
attending school, 9,479 were in non-Indian schools—9,004 in elementary and high school grades, 41 in university, and 434 in teacher, nurse or other training courses.

At the end of formal schooling, the Indian must make his own decision either to stay on the reserve or to earn a living in a wider Canadian society. If he chooses reserve life he may receive financial help in establishing himself in farming, fishing or business. If he chooses life away from the reserve, a job placement and counselling service is at his disposal.

Eskimos

There are about 11,500 Eskimos in Canada, about 8,000 of whom live in the Northwest Territories and the remainder in northern Quebec and Labrador. Since the traditional Eskimo culture is based on the hunting of sea mammals like the seal and the walrus, most Eskimos live along the coasts. Some inhabit the interior of the Northwest Territories mainland where caribou hunting and fishing have been the basis of their economy.

Forming about 38 p.c. of the Northwest Territories population, the Eskimos have a vital part to play in northern development. The North is their natural home and their special abilities for northern life qualify them to share in the employment opportunities that are being offered.



The huge Sir John Franklin residential composite vocational and high school was built by the Federal Government in Yellowknife, N.W.T., to serve the total population, Indian, Eskimo and white.



Indian and Eskimo children in the Inuvik Federal School operated by the Federal Government. There are more than 50 federal schools in the Northwest Territories and applicants to teach out-number teaching positions.

Until recently, the Eskimo was self-employed, living off the land. Hunting and, to some extent, fishing provided him with subsistence and trapping enabled him to purchase the trade goods to complete his domestic needs. But a serious decline in the number of caribou—a most important animal in the Eskimo economy—coupled with a drop in fur prices placed him in a grave economic situation.

While the structure of his economy tottered, different forces were striking his society. The North was being changed by influences outside his experience. Men from the south brought a new way of life to the North—introducing an alien technology and a tempo to which the Eskimo found it difficult to adjust. Some found themselves stranded between two ways of life—the old disappearing as a result of unforeseen circumstances, the new beyond their reach because of lack of education, training and purchasing power.

To aid the Canadian Eskimos, the Federal Government intervened with a long-term program of indirect and direct relief. Eskimos are being given the opportunity to improve their health and living standards and to acquire the training, skill and knowledge that will enable them to remain self-reliant citizens.

While the attainment of full economic self-sufficiency for all Eskimos remains a goal, a great deal has been accomplished. Family allowances,

old age security and assistance, aid to the blind, the disabled and the needy are available to Eskimos as to other Canadian citizens. Medical care and hospital services are provided by the Indian and Northern Health Services of the Department of National Health and Welfare.

Facilities have been provided for Eskimos to take vocational training, either on-the-job, at northern schools, or at special trade courses in other parts of Canada. This training has enabled many Eskimos to take wage-employment on northern construction and transportation jobs. About 100 Eskimos work on the DEW Line on maintenance and support jobs. About the same number work, mainly on the surface, at a nickel mine at Rankin Inlet. Other Eskimos drive trucks, operate heavy construction equipment, or are mechanics, carpenters, and semi-skilled tradesmen at many northern points.

Opportunities are being made available for Eskimo children to attend school and qualify through education for a better life. Eskimo children attend 20 federal schools and federal teachers teach Eskimo adults English, home economics and other subjects of immediate practical benefit at night classes.

Notable among the aspects of the new Eskimo life are the projects in which the Eskimo's initiative and special abilities have been encouraged. Eskimo co-operatives in northern Quebec and at Cape Dorset on Baffin Island are making use of natural resources and the unique artistic ability of the people. Arctic char, a fish that graces the tables of Canada's best restaurants, is caught and shipped by these co-operatives. At Cape Dorset there is a thriving Eskimo art colony, carving from stone and ivory distinctive pieces of sculpture and pioneering an innovation in art—sealskin and stone prints.

Eskimos living in the Mackenzie District vote in territorial and federal elections. Some practice in managing local affairs is provided by Eskimo participation in community councils. Eskimos, like other residents of the Northwest Territories, are governed by the Council of the Northwest Territories, an equivalent of a provincial legislative assembly.



Stone carving, once just a hobby, is now an important source of revenue to Canada's Eskimos. With simple tools and local materials such as sandstone and ivory from walrus tusks, the Eskimo has created stone carvings that have placed him in the front ranks of the world's primitive art.

These little citizens donned native garb to take part in the "All-Nations" day during the joint Windsor-Detroit International Freedom Festival. From the left they are Canadians of Slovakian, Lithuanian, Welsh, Ukrainian, Italian, Slovene, Hungarian, Croatian, German and Chinese origin.



New Canadians

Canada's two millionth post-war immigrant arrived late in 1960. Since World War II, Canada, the second largest immigrant-receiving country, has admitted approximately 600,000 settlers from the British Isles, a slightly higher number from the three main sources of European immigrants, Italy, Germany and

the Netherlands, and almost 145,000 from the United States. Immigration to Canada set a 43-year record in 1957 but there was a marked decline in 1958 and further declines in the two subsequent years. The recent lower levels are attributed in part to measures applied in 1957, and since continued, to keep the immigrant flow at a realistic level. It is Canadian policy to admit newcomers in accordance with the capacity of the country to provide opportunities for their settlement and successful integration into Canadian society. However, there is little doubt that the buoyant economies of many of the countries from which Canada receives the majority of her immigrants, coupled with persistent reports of higher unemployment in Canada, contributed to the decline.

During World Refugee Year (1959-1960) Canada admitted more than 3,500 refugees, including more than 200 tubercular refugees and their families brought to Canada under the auspices of the federal and provincial governments. It has been estimated that in the post-war years approximately 275,000 refugees from Europe, or about one-quarter of all European refugees, have been settled in Canada. In addition to special governmental projects, provision was made for the private sponsorship of refugees by agencies, groups and individuals in Canada. The efforts of individual Canadians and private organizations in this regard resulted in a substantial contribution to World Refugee Year.

In the past decade the Immigration Branch of the Department of Citizenship and Immigration, which is responsible for all matters related to the selection and establishment of immigrants, received reports indicating that more than 4,500 trades, service and industrial enterprises had been established by immigrants, providing employment for more than 20,000 persons, and representing a total investment in excess of \$36,000,000. In the same period more than 5,700 farms were bought or rented by immigrants, with a total investment of nearly \$19,000,000.

Immigration and Population, 1950-60

Year	Immigration	Estimated Population, June 1		
		Canadian-Born	Foreign-Born	Total
		No.	'000	'000	'000
1950.....	73,912	11,694	2,018	13,712
1951.....	194,391	11,949	2,060	14,009
1952.....	164,498	12,227	2,232	14,459
1953.....	168,868	12,516	2,329	14,845
1954.....	154,227	12,826	2,461	15,287
1955.....	109,946	13,151	2,547	15,698
1956.....	164,857	13,470	2,611	16,081
1957.....	282,164	13,806	2,783	16,589
1958.....	124,851	14,128	2,920	17,048
1959.....	106,928	14,462	2,980	17,442
1960.....	104,111	14,802	3,012	17,814

Citizenship

Canadian citizenship is a relatively new concept. In fact, prior to January 1, 1947, there was no such status for Canadians, notwithstanding that the Immigration Act of the day referred to certain classes of persons as "Canadian citizens" for the purposes of that Act and that the Canadian Nationals Act entitled certain persons to be known as "Canadian Nationals". Canadians did however possess a status of a wider nature in that they, in common with nationals of other parts of the British Commonwealth and Empire, were entitled to style themselves "British subjects".

The enactment of the Canadian Citizenship Act altered this picture. This Act established a Canadian national status and specified what classes of persons, whether in being or to be born, were entitled to claim this status as of January 1, 1947, the date of its enactment. It also made provision for the acquisition of Canadian citizenship by British subjects and aliens.

The Canadian Citizenship Act reaffirmed to an extent the principle of the "Common Code" that had originally been enunciated by the British Nationality and Status of Aliens Act, 1914, whereby persons born or naturalized in any part of the Dominions of the Crown were recognized as British subjects in every other part. However, British subjects resident in Canada did not necessarily become Canadian citizens thereby. As a result of certain agreements reached at the Commonwealth Conference on Citizenship held in

Many Canadian establishments arrange classes in English for their employees newly arrived from other countries. Here immigrants from Hungary, Italy, Germany, Austria and Poland attend a class.





Wearing his Naval Reserve uniform, this "new Canadian" takes the oath of allegiance prior to receiving his citizenship papers at a session of the Citizenship Court.

London in 1947, an amendment was enacted in 1950 which modified the "Common Code" principle to the extent that a person born in another Commonwealth country was not to be recognized as a British subject in Canada unless the country of his birth was listed in the First Schedule of the Canadian Citizenship Act and he was a citizen of that country. By a concurrent amendment a British subject in Canada entitled to style himself a "Commonwealth Citizen". As a result, today, residents of Canada may be classed as Canadian citizens, British subjects or Commonwealth citizens or aliens.

Canadian citizens are either "natural-born" or "other than natural-born". Natural-born citizens are (1) those who became entitled to this status on January 1, 1947, whether by birth or by derivation; (2) those who have been born on or since that date and who have either (a) been born in Canada or on a Canadian ship, or (b) whose derivative status has been recognized in accordance with the provisions of the Canadian Citizenship Act. "Other than natural-born" citizens are persons who, while having no claim to natural-born status, had citizenship conferred upon them on January 1, 1947, on account of prior naturalization, by domicile, residence or marriage. Also included in this category are persons to whom citizenship has been granted upon application since January 1, 1947.

An adult alien who wishes to become a Canadian citizen must file an application for citizenship with the Citizenship Court in the district where he resides. Upon the lapse of a statutory three-month posting period, he is called before the Court for examination by a judge in order to determine whether he possesses the qualifications required by the Act. These include age, legal admission to Canada as a "landed immigrant", the acquisition of "Canadian domicile", good character, an adequate knowledge of English

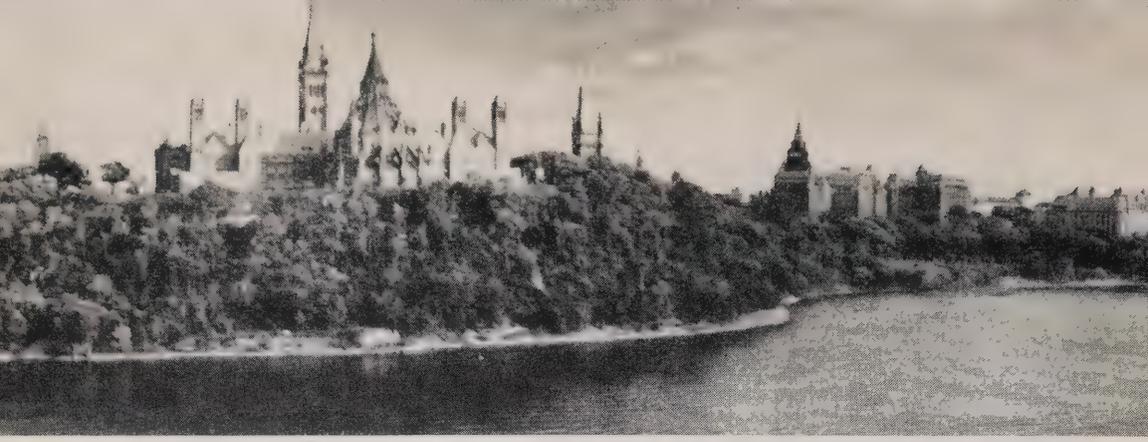
or French, some understanding of the responsibilities and privileges of Canadian citizenship and the intention to dwell in Canada permanently. The decision of the judge is forwarded to the Department of Citizenship and Immigration where a certificate may be granted at the discretion of the Minister. If granted, the certificate is returned to the Court where, during the course of a formal ceremony, it is presented to the applicant after he has taken the Oath of Allegiance and has renounced his former nationality.

The procedure is slightly different for British subjects or Commonwealth citizens. These persons may file their applications directly with the Minister. There is no statutory posting period required and once the Minister has exercised his discretion favourably, the certificate is sent directly to the applicant. However, the qualifications which British subjects are required to possess are identical to those required of an alien applicant.

Provision is also made in the Citizenship Act for the issuance upon application therefor of certificates of proof of citizenship to Canadian citizens and for the grant of citizenship to alien and British subject minor children of Canadian citizens. And in any case where a person is entitled to describe himself as a Canadian citizen, he may obtain, upon request, a pocket size or miniature certificate. Applications for these several types of certificates are to be addressed to the Registrar of Canadian Citizenship, Department of Citizenship and Immigration, Ottawa, Ontario, and must be accompanied by the appropriate fee.

Rideau Hall, the official residence of Canada's Governor General. Built in 1838 near the junction of the Rideau and Ottawa Rivers, this large limestone house was purchased by the Canadian Government in 1868 and has served continuously since as the vice-regal residence.





The skyline of Ottawa, Canada's capital, from the Ottawa River which separates the provinces of Quebec and Ontario at this point. Shown are the centre block of the Parliament Buildings which houses the chambers of both the House of Commons and the Senate, and the Peace Tower and the circular Parliamentary Library. Up-river are office buildings housing government departments and, at the extreme right, the Supreme Court.

How Canada is Governed

Canada—a federal union of provinces and territories within a strictly limited constitutional monarchy and, at the same time, an independent and completely autonomous member of the British Commonwealth of Nations—has evolved slowly and sometimes painfully over the centuries into a continental state enjoying a system of democratic government fitting the needs and wishes of its people. Canadian government has emerged from the earliest form—company rule—through despotic royal rule, military rule and civilian rule by law in the seventeenth and eighteenth centuries to representative government by royal appointment and, finally, to the present form of elected representative government responsible to the electors at large. The basic principle of government today and for the past 113 years is that the Sovereign's Canadian ministers are responsible to the popularly elected House of Commons and can remain in office only so long as they command the confidence of that House.

At the time of Confederation, when the British North America Act of 1867 united Canada (Ontario and Quebec), Nova Scotia and New Brunswick in one dominion under the name of Canada, any form of government other than federal union would have been completely unworkable. In the eastern Maritimes and the St. Lawrence-Great Lakes region, there were well established colonies with deep regional cleavages in political and cultural interests; in the west were a series of relatively small and scattered colonies, geographically isolated from the east and sharing common interests with their United States neighbours to the south. A strong central government was required to carry out vast transcontinental projects, such as the railway, to provide defence and to regulate trade and commerce. Matters of regional or local concern, on the other hand, could not be handled satisfactorily by national legislation. Federal and provincial jurisdictions were therefore clearly defined in 1867 and, although the whole pattern of Canadian life has undergone a vast change since then and to the four original provinces have been added six more provinces and two territories, the principles as laid down at Confederation are still, with some amendment, in successful operation.

The impressive array of specific powers falling within the exclusive legislative authority of the Parliament of Canada included control of the armed forces, the regulation of trade and commerce, banking, credit, currency and bankruptcy, criminal law, postal services, the fisheries, patents and copyrights, the census and statistics, the raising of money by any mode of taxation and, in the field of communication, such matters as navigation and shipping, railways, canals and telegraphs. In addition, the Federal Government was endowed with a residual authority in matters beyond those specifically assigned to the provincial legislatures and including the power to make laws for the peace, order and good government of Canada.

The provinces, on the other hand, were granted powers embracing mainly such matters of local or private concern as property and civil rights, civil law, provincial company charters, municipal government, hospitals and asylums, licences, the management and sale of public lands, and direct taxation within the province for provincial purposes. Legislation concerning immigration and agriculture could be enacted by both the Parliament of Canada and the provincial legislatures with the federal law having over-riding authority in the event of conflict.



The Parliament Buildings in Victoria, British Columbia.



Mme. Georges Vanier curtsies to her husband, the Governor General, following her investiture by him as a Dame of Grace in the Order of the Hospital of St. John of Jerusalem. During 1960 the Governor General and Mme. Vanier entertained more than 11,500 people and travelled 15,600 miles on official visits from coast to coast.

In view of the cultural dualism of the new Dominion, the provincial legislatures were given exclusive authority in relation to education, subject to federal intervention in questions involving legal rights in denominational schools. For a like reason, the use of the English and the French languages was safeguarded, it being specifically provided that either language may be used in the debates of the Parliament of Canada and of the Legislature of Quebec and in any court of Canada; and that both languages shall be used in the respective records and journals and in the published Acts of the Parliament of Canada and of the Legislature of Quebec.

The Parliament of Canada

Next to the distribution of legislative jurisdiction between the central and provincial governments, the most significant feature of the Canadian constitution is its unwritten parliamentary system "similar in principle to that of the United Kingdom".

That the Canadian constitution is founded on the British parliamentary system is evident in the fact that Parliament embraces the Queen, the Senate and the House of Commons; that the executive and legislative powers are in close identification through the control of administration by leaders of the parliamentary majority; and that the judiciary is virtually independent of control by either the executive or legislative branches of government. The Crown is the unifying symbol of all three spheres of power.

The Queen. Although Her Majesty Queen Elizabeth II is Queen of Canada, her personal participation in the functions of the Crown for Canada is necessarily reserved to such occasions as a royal visit or the periodic appointment of a personal representative on the advice of her Canadian ministers. The presence of Her Majesty at the opening of Canada's Twenty-Third Parliament in October 1957 and at the celebration of the opening of the St. Lawrence Seaway in June 1959 were occasions of unprecedented significance for Canadians. In delivering the Speech from the Throne, the Queen became the first sovereign to inaugurate in person a session of Parliament as Head of State of Canada, acting on the direct advice of her Canadian ministers.

The title of the Queen, so far as Canada is concerned, is "Elizabeth the Second, by the Grace of God of the United Kingdom, Canada and Her Other Realms and Territories Queen, Head of the Commonwealth, Defender of the Faith". Sovereigns of Canada since Confederation in 1867 are as follows:—

<u>Sovereign</u>	<u>Dynasty</u>	<u>Year of Birth</u>	<u>Date of Accession</u>
Victoria.....	House of Hanover.....	1819	June 20, 1837
Edward VII.....	House of Saxe-Coburg and Gotha....	1841	Jan. 22, 1901
George V.....	House of Windsor.....	1865	May 6, 1910
Edward VIII.....	House of Windsor.....	1894	Jan. 20, 1936
George VI.....	House of Windsor.....	1895	Dec. 11, 1936
Elizabeth II.....	House of Windsor.....	1926	Feb. 6, 1952

The personal representative of the Queen in Canada is the Governor General, appointed by Her Majesty entirely on the advice of the Prime Minister of Canada and usually for a term of five years. He exercises such formal authority as summoning, proroguing and dissolving Parliament and assenting to Bills in the Queen's name. The present Governor General of Canada, the Right Honourable Georges Philias Vanier, D.S.O., M.C. and Bar, is the second Canadian to hold this high office. Appointed on Aug. 1, he assumed office on Sept. 15, 1959.

The active Canadian executive authority for controlling the exercise of the powers of the Crown resides in the Cabinet or Ministry.

The House of Commons. Members of the House of Commons are elected in a general election usually held subsequent to the normal dissolution of Parliament by the Governor General on the advice of the Prime Minister at any time up to the end of five years after the last election. Occasionally a general election may be called subsequent to a grant of dissolution following defeat of the government measure or passage of a vote of want of confidence by the House in the government of the day.

Electors include all Canadian citizens or British subjects, male or female, of the age of 21 or over, who have been resident in Canada for twelve months prior to polling day. Seats in the House are distributed geographically as follows:

Newfoundland.....	7	Alberta.....	17
Prince Edward Island.....	4	British Columbia.....	22
Nova Scotia.....	12	Yukon Territory.....	1
New Brunswick.....	10	Mackenzie District, Northwest Territories.....	1
Quebec.....	75		
Ontario.....	85		
Manitoba.....	14	TOTAL.....	265
Saskatchewan.....	17		==

Party standing, as of Jan. 1, 1961, was as follows: Progressive Conservatives, 205; Liberals, 50; Co-operative Commonwealth Federation, 8; New Party, 1; vacant, 1. Four of the 264 members were women.

The New Party, sponsored by the Co-operative Commonwealth Federation and the Canadian Labour Congress, was represented at the polls for the first time and won its first seat at a by-election on Oct. 31, 1960.

The leader of the party winning the most seats in the general election is called upon by the Governor General, as representative of the Queen, to form a government. He becomes the Prime Minister and generally chooses

party colleagues from among the elected members to form the Cabinet. If he wishes to have in his Cabinet someone who is not a member of the House of Commons, that person must secure a seat in the House within a short time through a by-election. The Prime Minister and all his ministers in charge of departments of government sit in the House of Commons, although a minister without portfolio may be a member either of the House or of the Senate.

The Cabinet is responsible for determining all important policies of government and securing the passage of such legislation, financial measures and administrative provisions as their supporters may approve. The Ministers of the Crown, as the members of the Cabinet are called, are chosen generally to represent all regions of the country and its principal cultural, religious and social interests.

The members of the Ministry, as at Jan. 1, 1961, are listed below according to precedence.

Rt. Hon. John George Diefenbaker.....	Prime Minister
Hon. Howard Charles Green.....	Secretary of State for External Affairs
Hon. Donald Methuen Fleming.....	Minister of Finance and Receiver General
Hon. George Hees.....	Minister of Trade and Commerce
Hon. Léon Balcer.....	Minister of Transport
Hon. Gordon Churchill.....	Minister of Veterans Affairs
Hon. Edmund Davie Fulton.....	Minister of Justice and Attorney General
Hon. George Clyde Nowlan.....	Minister of National Revenue
Hon. Douglas Scott Harkness.....	Minister of National Defence
Hon. Ellen Louks Fairclough.....	Minister of Citizenship and Immigration
Hon. J. Angus MacLean.....	Minister of Fisheries
Hon. Michael Starr.....	Minister of Labour
Hon. William McLean Hamilton.....	Postmaster General
Hon. William J. Browne.....	Solicitor General
Hon. Paul Comtois.....	Minister of Mines and Technical Surveys
Hon. J. Waldo Monteith.....	Minister of National Health and Welfare
Hon. Francis Alvin G. Hamilton.....	Minister of Agriculture
Hon. Raymond O'Hurley.....	Minister of Defence Production
Hon. David J. Walker.....	Minister of Public Works
Hon. Pierre Sévigny.....	Associate Minister of National Defence
Hon. Hugh John Flemming.....	Minister of Forestry
Hon. Noël Dorion.....	Secretary of State
Hon. Walter Dinsdale.....	Minister of Northern Affairs and National Resources
Hon. George Ernest Halpenney.....	Minister without Portfolio



The first total Indian vote exercised in a federal election was cast in a by-election on October 31, 1960. In the Hiawatha Reserve Council Hall at Rice Lake, Ontario, an Indian casts his vote before the bust of Chief Tecumseh.



The Governor General, the Prime Minister and the premiers of Canada's ten provinces, photographed at Government House, October, 1960.

The Senate. The Senate or Upper House of the Parliament of Canada shares with the House of Commons the responsibility for the enactment of all federal legislation in that Bills must pass both Houses before receiving Royal Assent through the Governor General. Yet the influence of the Senate on legislation is immeasurably less than that of the Commons in which most public Bills are introduced by the Ministry and to which the latter is responsible. The most striking evidence of this fact is that any Bill for the expenditure of any public money or the imposition of any tax must originate in the elected House, by custom, through the Cabinet. None the less, the Senate has the power to perform a valuable service to the nation in amending and delaying the passage of measures that might result from sudden shifts in public opinion or party strength.

Canadian senators are summoned for life by the Governor General, on the nomination of the Prime Minister, with equality of representation



The \$7,000,000 Sir Charles Tupper Building, completed in 1960, consists of five blocks at different ground levels and has a total area of 421,380 square feet. Built to house the offices of various government departments, its exterior finish is of buff coloured brick with granite trim and porcelain enamel spandrels separating rows of metal windows.

for regional divisions (except in the Atlantic Provinces after the entry of Newfoundland in 1949 with six senators). The representation in the Senate by regions and provinces is as follows:—

Ontario.....	24	Western Provinces.....	24
Quebec.....	24	Manitoba.....	6
Atlantic Provinces.....	30	British Columbia.....	6
Nova Scotia.....	10	Alberta.....	6
New Brunswick.....	10	Saskatchewan.....	6
Prince Edward Island.....	4		
Newfoundland.....	6	TOTAL.....	102

The Yukon Territory and the Northwest Territories at present lack representation in the Senate.

Party standing, as of Jan. 1, 1961, was as follows: Progressive Conservatives, 26; Liberals, 73; Independent, 2; Independent Liberal, 1.

The first and only Treaty Indian to be appointed to the Senate is the Hon. James Gladstone, a member of the Blood Tribe in the Blackfoot Nation. As a Treaty Indian, he was not entitled at the time of his appointment in 1958 to vote in general elections, but legislation passed in 1960 now extends the franchise to all Indians.

While the Ministers of the Crown carry the political responsibilities of their respective departments, the federal civil service forms the staffs of the twenty departments and of various boards, commissions, bureaus and other agencies of the government. The day-to-day administration of a department is handled by a permanent head, usually known as deputy minister. The majority of the civil servants are recruited, classified and promoted by the Civil Service Commission of Canada.



The Indians of the Walpole Island Band in southern Ontario have taken a major step forward in self-government by exercising the right to spend the Band's own revenue. Band funds are allocated to road-building, salaries (mainly for a full-time Indian game warden), housing loans, agricultural assistance, irrigation on the famous Walpole Island duck marshes and education.

Provincial and Territorial Government

The Provinces. Similar political institutions and constitutional usages operate in the government of the ten provinces as in that of the nation as a whole. In each province the Queen is represented by a Lieutenant-Governor appointed by the Governor General in Council, usually for a term of five years. The powers of the Lieutenant-Governor in the provincial sphere are essentially the same as those of the Governor General in the federal sphere.

The Legislature of each of the provinces comprises, in addition to the Lieutenant-Governor, a Legislative Assembly elected for a term of five years and, for Quebec only, a Legislative Council of 24 members appointed for life by the Lieutenant-Governor in Council. The franchise in provincial elections is granted, generally speaking, to every adult 21 years of age or over, although in Saskatchewan, Alberta and British Columbia the age is 18, 19 and 19, respectively. The conventions of cabinet government operate in the Legislative Assembly of each of the provinces as in the House of Commons at Ottawa. Provincial premiers and administrations as at Jan. 1, 1961, were as follows:—

Newfoundland.....	Hon. J. R. Smallwood.....	Liberal
Prince Edward Island.....	Hon. Walter R. Shaw.....	Conservative
Nova Scotia.....	Hon. R. L. Stanfield.....	Progressive Conservative
New Brunswick.....	Hon. Louis J. Robichaud.....	Liberal
Quebec.....	Hon. Jean Lesage.....	Liberal
Ontario.....	Hon. Leslie M. Frost.....	Progressive Conservative
Manitoba.....	Hon. Dufferin Roblin.....	Progressive Conservative
Saskatchewan.....	Hon. T. C. Douglas.....	Co-operative Commonwealth Federation
Alberta.....	Hon. Ernest C. Manning.....	Social Credit
British Columbia.....	Hon. W. A. C. Bennett.....	Social Credit

The Speech from the Throne is read by the Lieutenant Governor as Quebec's 26th Legislature is formally opened on Nov. 10, 1960.



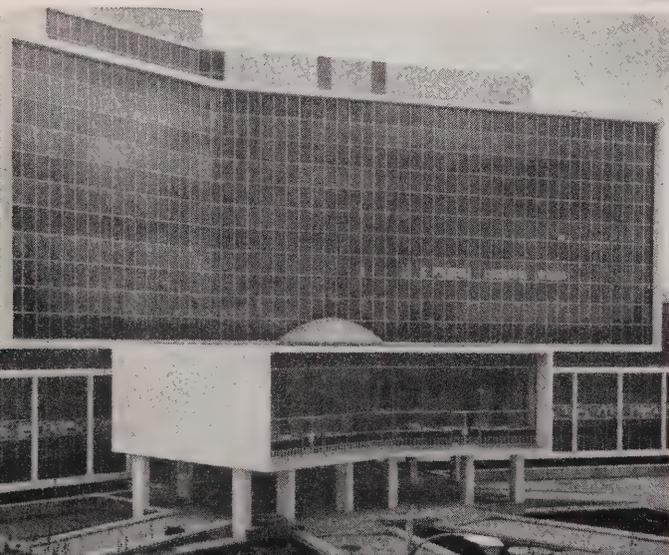
The Territories. The vast and sparsely populated regions of northern Canada lying outside the ten provinces and comprising Yukon Territory and the Northwest Territories have attained both elected representation in the House of Commons and a measure of local self-government. The local government of Yukon Territory is composed of a Commissioner, appointed by the Federal Government, and a locally elected Legislative Council of seven members, meeting at Whitehorse. The government of the Northwest Territories is vested in a Commissioner (who is the Deputy Minister of the Department of Northern Affairs and National Resources) assisted by a Council of nine members of whom four are elected by popular franchise in the Territories and five are appointed by the Federal Government from among federal officials. The Council meets annually in the Territories and at least once each year at Ottawa which is the seat of government. It is advised by the Eskimo Affairs Committee, a policy-making body to which, in 1959, for the first time, two Eskimos were added as members.

Local Government

As local government at the municipal level falls under the jurisdiction of the provinces, there are ten distinct systems of municipal government in Canada, as well as many variations within each system. The variations are attributable to differences in historical development and in area and population density of the 4,300 incorporated municipalities. Possessing the power exclusively to make laws respecting municipal institutions, the provincial legislature of each province has divided its territory into varying geographical areas known generally as municipalities and more particularly as counties, cities, towns, villages, townships, rural municipalities, or municipal districts. Municipalities are incorporated by provincial legislation and have



In front of the Town Hall, the Mayor and two council members display a newly-designed road sign planned to attract tourists to Yellowknife, N.W.T.



In sharp contrast is the new city hall in Hamilton, Ontario. Opened by the Governor General on Nov. 21, 1960, the \$9,300,000 building is located on an eight-acre site in downtown Hamilton. The council chamber extends out over the front entrance of the building and is finished in teak strips, walnut panelling and aluminum.



Swearing-in of the judges at the first session of the new Northwest Territories Court of Appeal in Yellowknife, Oct. 18, 1960. Since 1955 a resident trial judge has served; for 50 years before that, the Territories had no high court, either trial or appellate.

various powers and responsibilities suited to their classification. A municipality is governed by an elected council whose head may be called the mayor, reeve, warden or overseer, and the other citizens who are its members may be known as controllers, aldermen or councillors. The responsibilities of the municipalities are generally those most closely associated with the citizen's everyday life, his well-being and his protection.

The Judiciary

The Canadian judiciary interprets the law and administers justice. The provinces are authorized to administer justice in the territories under their jurisdiction, including the organization of civil and criminal courts and the establishment of procedure in civil matters in those courts. Legislation concerning criminal law and the procedure in criminal matters is under the jurisdiction of the Parliament of Canada.

The Supreme Court of Canada is the court of final appeal in Canada, and exercises general appellate jurisdiction throughout the nation in civil and criminal cases. The jurisdiction of the Exchequer Court extends to cases embracing claims made by or against the Crown in the right of Canada. The Chief Justice of Canada and the puisne judges of the Supreme and Exchequer Courts are appointed by the Governor General in Council.

Judges of the superior, district and county courts in each province, except those of the courts of probate in Nova Scotia and New Brunswick, are appointed by the Governor General in Council and their salaries, allowances and pensions are fixed and paid by the Parliament of Canada.



At the Ninth Commonwealth Conference in London in May 1960, the ten Commonwealth prime ministers were received by their Sovereign at a dinner given in Windsor Castle.

Foreign Affairs

Canada's relations with other countries, as those of independent states generally, are governed by national interests, both immediate and long term. These interests are largely concerned with the development of friendly and useful relations with people of other lands, the protection of national security and the development of foreign trade and, obviously, the term "national interests" must be interpreted in its broadest sense if these objectives are to be attained.

Canada's external relations are carried on bilaterally through Canadian missions abroad and also multilaterally through the many existing international organizations of which Canada is a member. For these purposes, Canada maintains diplomatic, trade and consular representatives in a large number of countries, and has established permanent offices accredited to the principal international organizations of which she is a member.

There are certain international organizations and institutions of particular interest to Canada. One of the longest-standing associations is that within the Commonwealth. Membership in the Commonwealth is not readily defined and confers no legal rights; however, its particular value stems from a sense of goodwill toward and responsibility for other Commonwealth countries. While the members of the Commonwealth are not united for specific political, economic or defence purposes, the Commonwealth connection remains an important element in Canada's external relations because

of traditional ties, and equally because of the remarkable adaptability of the Commonwealth to changing world conditions. It remains one of the world's great associations of sovereign states embracing many separate races and different creeds.

During 1960 much public attention was focussed on the United Nations. Through her membership in this organization Canada attempts to contribute toward the solution of fundamental problems of world peace, good order and well being. Canada has not infrequently been asked by the United Nations to act as mediator between advocates of points of view which initially appeared irreconcilable; during 1960 she continued to play a very active role, particularly in the debates on disarmament and in supporting both morally and materially the actions of the United Nations in the Congo Republic.

As one of the original signatories to the North Atlantic Treaty, Canada remains a consistent supporter of NATO. Membership in this regional organization enables Canada to co-operate intimately with the United Kingdom, the United States and the twelve European member states in the formulation of policy and attitudes designed to resist possible aggression and at the same time to seek settlement of some of the outstanding issues dividing the world today. While principally known for co-operation in the field of defence, NATO has become an important instrument of political consultation among member governments.

The United Nations

Firm support for the United Nations is an essential element of Canadian foreign policy. Canada's contribution over the years to the work of the United Nations has included participation in mediation efforts in Kashmir, Indonesia and Palestine, and in the collective United Nations action that stopped aggression in Korea. In the 1956 Middle East crisis, Canada played a significant role and continues to participate in the United Nations Emergency Force. In 1960 Canada responded promptly to a United Nations request for support for its operations in the Congo by supplying military and civilian specialists and pledging political and financial support.



A Canadian sergeant on UN duty in Egypt gives first aid to a young Bedouin who cut his face on a barbed wire fence.



Canadian members of the UN force in the Congo examine carvings in the Ivory Market in Leopoldville.

Canada has also continued its humanitarian contributions to the several United Nations programs for refugees. The original program which marked World Refugee Year by the admission to Canada of 100 tuberculous refugees and their families was subsequently doubled through the admission of a second group of refugees. Consideration is being given to the possibility of making a further contribution to this program.

In the field of disarmament, Canada holds the view that the United Nations should play an active role. Since the interruption of negotiations in the Ten-Nation Committee on Disarmament in June, 1960, Canada has pressed vigorously in the United Nations Disarmament Commission and at the General Assembly for measures to bring about the earliest possible continuation of negotiations.

Canada's total financial contribution to the United Nations has increased. In 1960, the Canadian assessed share of the regular budget of the United Nations was 3.11 p.c. which, with the assessments for the budgets of the United Nations Specialized Agencies, totalled more than \$3,600,000. Contributions to such special United Nations programs as the United Nations Children's Fund (UNICEF), the United Nations Expanded Program of Technical Assistance (ETAP), the United Nations Relief and Works Agency Program for Palestine Refugees in the Near East (UNRWA), the Program of the United Nations High Commissioner for Refugees, and the Special Fund for assistance to less developed countries totalled more than \$6,200,000. Canada also continues to provide training facilities for United Nations fellowship holders and to send Canadian experts abroad under United Nations auspices.

NATO

Support for the North Atlantic Treaty Organization continues to be another essential element of Canadian foreign and defence policies. In addition to active participation in the work and deliberations of the North Atlantic Council, Canada continues to provide a significant contribution to the collective defence of the North Atlantic Treaty area, including the Canada-United States region. In the NATO European area Canada's contribution consists of a fully-equipped Infantry Brigade Group and an Air Division. A decision to re-equip eight squadrons of the Air Division with supersonic aircraft was announced by the Government in 1959; production of these aircraft in Canada is already under way. In addition a substantial part of Canada's naval forces is earmarked for defence of the North Atlantic and the coastal waters in the Canada-United States region. The anti-submarine capabilities of these naval forces are reinforced by three RCAF squadrons of maritime aircraft. Canada also co-operates closely with the United States through the North American Air Defence Command (NORAD) for the defence of the North American region.

Since its inception in April 1950, Canada has provided under its Mutual Aid Program assistance to NATO European countries in the form of military equipment, aircrew training and logistic support for materiel already transferred. Approximately \$1,700,000,000 has been allocated for these purposes as well as for contributions to the NATO military budget and to common infrastructure. More than 5,500 pilots and navigators from ten member countries graduated under the NATO Air Training Plan carried out at RCAF establishments from 1950 until the completion of the program in July, 1958. A limited number of aircrew from Norway and Denmark are continuing their training in Canada under special agreements.

In addition to defence co-operation within the alliance there are significant activities in the non-military fields. Consultation between member governments in these other fields, particularly in the political field, is of prime importance in ensuring understanding of each other's policies, and in avoiding contradictions in these policies as they relate to the objectives of the North Atlantic Treaty.

Villagers wave at a Centurion tank as it carries out a NATO exercise in western Europe.





Visiting leaders from Northern Nigeria pose with Prime Minister Diefenbaker after having presented him with a magnificent robe.

In addition to its official activities as a member of NATO, the Canadian Government also encourages and assists voluntary organizations in Canada supporting NATO, such as the Canadian NATO Parliamentarians' Association and the Canadian Atlantic Co-ordinating Committee.

The Commonwealth

Membership in the Commonwealth affords Canada a valuable, close relationship with a group of nations which, despite their diversity, have bonds in shared traditions and ideals. Constant consultation and friendly exchange of views are maintained among members and the members continue to grow in number. For example, in May 1960, the Commonwealth Prime Ministers met in London, and a meeting of the Commonwealth Economic Consultative Council was held in September. On October 1, Nigeria was welcomed as a new member of the Commonwealth. The Prime Ministers of Australia and the Federation of Malaya and many other leaders from Commonwealth countries visited Canada during the year.

Canada's main effort to aid under-developed countries has been through the Colombo Plan, which began in 1950 as a scheme to assist Commonwealth countries in South and Southeast Asia and has since been extended to other countries in the area. Irrigation and hydro-electric developments in India and Pakistan, an atomic reactor in India, and a fisheries development program in Ceylon have been among the major projects assisted by Canada's contribution. Canadian experts have been sent to work in the Colombo Plan area and many scholars from the area have received training in Canada in agriculture, engineering, medicine, business and public administration and other fields. In 1960 a new program of economic assistance to Commonwealth

states in Africa was begun, to be known as the Special Commonwealth Aid for Africa Program, under which Canada has pledged \$10,500,000 for the first three years.

The Commonwealth Scholarship and Fellowship Scheme began to operate in 1960. More than 100 scholars from various Commonwealth countries were given scholarships for study at Canadian universities. Twenty-four Canadians received scholarships to universities in other Commonwealth countries under the scheme, and it is expected that more will be given.

Canada-United States Relations

Obviously Canadian relations with the United States constitute a very important element in Canada's external relations, and co-operation and mutual respect are reflected in day-to-day relations. The facts of geography and easy communications have fostered the growth of close and friendly relations in trade, economic, scientific and cultural activities. While following separate historical paths in their national development, they have as a common heritage a similar regard for the principles of democratic government and individual liberties. Determination to defend these liberties has resulted in a close partnership between Canada and the United States in the defence of North America.

One of the most significant recent developments in relations with the United States was the signing, in 1961, of a treaty on the co-operative development of the waters of the Columbia River. While each country will be completely responsible for all construction required in its own territory, both countries will secure greater benefits at less cost through co-operative development than either could secure by independent development of the resources on its own side. This agreement thus points up both the advantages of co-operation in a matter of economic significance to the two countries and a guiding principle in their relations: mutual respect for each other's individuality.



Under a unique treaty signed by the U.S. President and the Prime Minister of Canada on January 16, 1961, each country will spend more than \$450,000,000 in the next ten years on a project to develop the power resources of the Columbia River and to contain its flood potential. Canada will build three storage dams, two near the outlet of the Arrow Lakes and the third near Mica Creek on the main stream of the Columbia. The United States will build new power generating stations and both countries will share the resulting power equally.



Training in the operation and maintenance of farm and public works equipment and vehicles was provided in a six-months course to 37 young Vietnamese technicians at Laval University Agricultural School under the Colombo Plan Technical Assistance program.

Canadian Foreign Aid Programs

In recognition of the pressing needs of the economically under-developed areas of the world, Canada is participating in a number of bilateral aid programs. The oldest and the largest of these is the Colombo Plan, now in its tenth year, under which Canada has expended or appropriated a total of more than \$331,000,000 for economic and technical assistance to recipient member countries in South and Southeast Asia. These Canadian Colombo Plan funds have been used for such things as the training of foreign technical and engineering students in Canada, the provision of commodities such as non-ferrous metals, fertilizers and wheat, and for capital projects such as the establishment of atomic reactors and hydro-electric plants, the erection of power transmission lines, and the provision of railway equipment. The largest of these capital projects has been the Warsak Hydro-Electric Project in the northern part of West Pakistan which, with a Canadian contribution of over \$36,000,000, constitutes the greatest development of its kind in Pakistan. Another capital project of major importance has been the construction of the Canada-India reactor near Bombay in India, the most modern research instrument of its kind in India.

The second of Canada's bilateral aid programs is the Commonwealth Technical Assistance Scheme which was established in 1958 to extend technical assistance to those parts of the Commonwealth not receiving assistance under the Colombo Plan. Parliament appropriated \$500,000 for this program in 1959-60 and a further \$500,000 was appropriated in 1960-61.

The third of Canada's bilateral aid programs, the Canada-West Indies Aid Program, was also established in 1958. At that time, Prime Minister Diefenbaker announced that, subject to the appropriation of funds by Parliament, Canada would provide \$10,000,000 to the West Indies during the

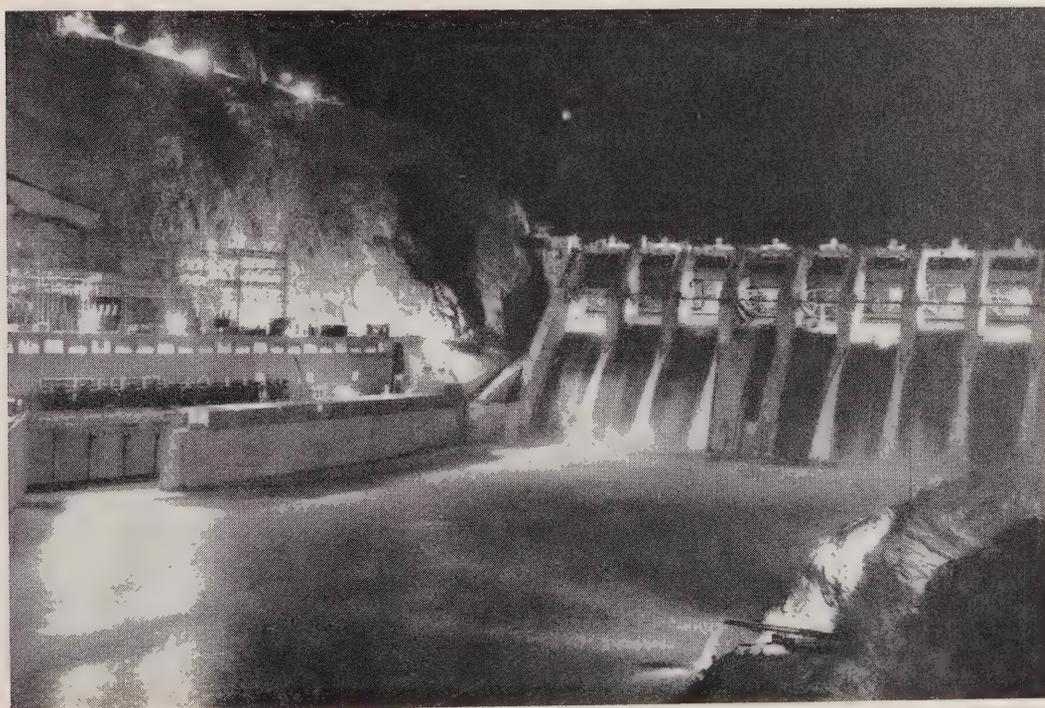
following five years. In addition to the provision of technical assistance, Canada has already agreed to provide two 1,500-ton ships at a total cost of approximately \$6,000,000 and these are now under construction in Canadian ship yards. Other capital assistance projects are under consideration.

The fourth bilateral assistance program in which Canada is participating, the Special Commonwealth African Assistance Program, was announced at the meeting of Commonwealth Finance Ministers at London in September 1960. At that time the Canadian Government announced its intention to contribute \$10,500,000 over the next three years, subject to the approval of Parliament, for the provision of economic and technical assistance to Commonwealth countries in Africa.

Under these bilateral assistance programs, the recipient countries are requested to propose appropriate projects, having a high priority in their economic development programs, to which available funds might be devoted. After careful consideration and investigation of these proposals, a decision is taken in Canada as to the projects which will be undertaken. The investigation of such projects, and other matters concerning the direction and administration of Canada's bilateral assistance programs, is the responsibility of the External Aid Office, which reports to the Secretary of State for External Affairs.

Apart from bilateral assistance programs, Canada has contributed to economic and technical assistance programs under the United Nations or United Nations Specialized Agencies, including the Expanded Program of Technical Assistance, the United Nations Children's Fund, the International Bank and the Special Fund.

A Canadian contribution of more than \$36,000,000 helped to build the Warsak Dam in Pakistan.



Posts Abroad

At the end of March 1961, Canada was represented abroad by the following diplomatic and consular posts:

	Embassies (37)		Legations (1)
Argentina	Haiti	Portugal	Czechoslovakia
Austria	Indonesia	Spain	
Belgium*	Iran	Sweden	
Brazil	Ireland	Switzerland	
Chile	Israel	Turkey	
Colombia	Italy	U.S.S.R.	
Cuba	Japan	United Arab Republic	
Denmark	Lebanon	U.S.A.	
Dominican Republic	Mexico	Uruguay	
Finland	Netherlands	Venezuela	
France	Norway†	Yugoslavia	
Germany	Peru		
Greece	Poland		
			Office of Commissioner (1)
			The West Indies: Port of Spain, Trinidad
Offices of High Commissioners (10)	Consulates General (10)		Military Missions (1)
Australia	Congo:	United States:	Berlin
Ceylon	Leopoldville	Boston	
Ghana	Germany:	Chicago	
India	Hamburg	Los Angeles	
Malaya‡	Philippines:	New Orleans	
New Zealand	Manila	New York	
Nigeria		San Francisco	
Pakistan		Seattle	
Union of South Africa			
U.K.			
			Consulates (4)
			Brazil: Sao Paulo
			Iceland: Reykjavik
			United States: Portland, Maine Detroit
	International Supervisory Commissions (2)		
	Vietnam		
	Cambodia		
	Permanent Missions to International Organizations (7)		
Brussels:			
European Economic Community			
European Atomic Energy Community			
European Coal and Steel Community			
Geneva:			
United Nations			
New York:			
United Nations			
Paris:			
North Atlantic Council and Organization for European Economic Co-operation			
United Nations Educational, Scientific and Cultural Organization			

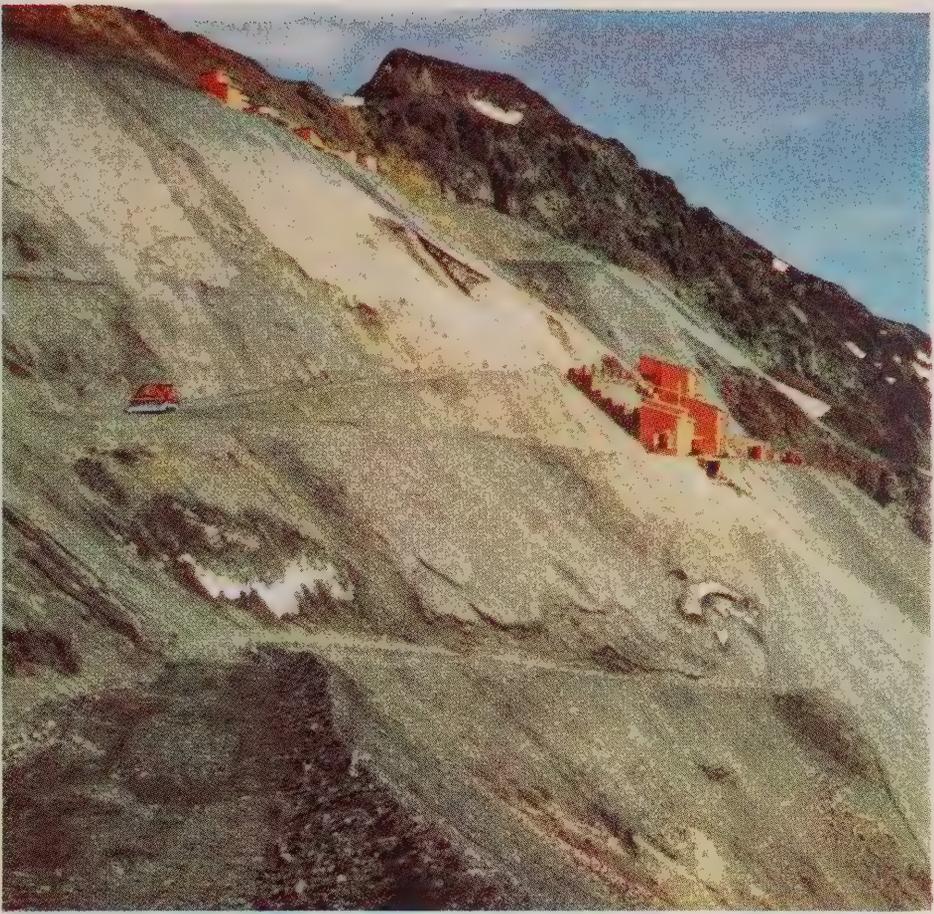
* Also accredited to Luxembourg

† Also accredited to Iceland

‡ Also accredited to Burma



The Canadian Embassy at The Hague, The Netherlands.



A six-mile road snakes up McDame Mountain in British Columbia to the upper levels where asbestos is mined. Mineral is dumped at the upper level, crushed and conveyed down to the lower plant where it is loaded into tramline buckets which carry it three miles to the mill at the foot of the mountain. This mine produces about 40,000 tons of asbestos a year.

Natural Resources

In the final analysis, a nation's greatest wealth lies in its human resources and when those are supplemented by abundance of natural resources—rich ore-bearing rocks, vast expanses of good arable soil, mile upon mile of self-renewing forest, seas and lakes teeming with life and ample sources of power to supplement the labour of man's hands—the nation so blessed is rich indeed. The Canadian people are, historically, not far removed from their pioneer forefathers to whom the opening of the West, the carving out of a railway line through rugged mountain ranges and across trackless prairie, the harnessing of waterfalls and turbulent rivers and the establishment of mines and lumber camps far from the populated places were never matters of consideration as to whether these things could be done, but merely as to how best to do them.

This pioneer philosophy is today being applied to opening up the difficult north country, transporting oil—the “black gold” of the West—across Canada and into the United States by pipeline, developing peaceful uses of atomic power, improving the great paths of transportation, by water, land and air and, at the same time, giving increasing thought to the problems of conservation of renewable resources while exploiting all the natural riches of the land.



The Trail, British Columbia, operations of the Consolidated Mining and Smelting Company, showing the chemical fertilizer plants in the foreground and the metallurgical operations in the background, which includes the largest zinc plant in the world, producing 530 tons per day of zinc, 400 tons of lead, 1,600 tons of fertilizer plus significant quantities of silver, cadmium, bismuth, gold, antimony and indium.

The Rocks – Mining

The continuing growth of Canada's mineral industry is dependent, in large measure, upon the expansion of the modern world's industrial economy, particularly that of the United States. Canada has been abundantly blessed with mineral raw materials vital to the needs of primary and secondary manufacturing industries of our modern world. In United States markets, Canada has certain distinct advantages in mineral trade in relation to other overseas sources because of proximity to that country, corporate affiliations with United States firms, and a favourable economic environment in Canada due in part to incentive mining taxation.

The remarkable progress of the Canadian mineral industry since World War II is evidenced by the increase in value of mineral production from \$499,000,000 in 1945 to slightly more than \$1,000,000,000 in 1950, \$1,800,000,000 in 1955 and \$2,476,240,506 in 1960. The index of physical volume of mineral production, with the base year of 1949 being considered at 100, had risen from 109.5 in 1950 to 257 by 1960. For Canadian industry as a whole the comparable physical volume index in 1959 was 169, illustrating that mineral industry growth has greatly out-paced the growth of the industrial economy in general.

Minerals and products of the mineral processing industries are becoming of increasing importance in Canada's export trade and are of prime importance in helping to improve the country's trade position. The export value of minerals and mineral products of all types exceeds the value of exports of all other industries and now accounts for almost 40 p.c. of Canada's total export trade compared to about 28 p.c. at the beginning of the decade. The percentage of the gross value of manufacturing industries based on minerals and mineral products as related to total manufacturing has been rising steadily over the past decade from 41 p.c. in 1949 to approximately 50 p.c. in 1959. The expansion of mineral trade and mineral-based manufacturing are further illustrative of the growing importance of the mineral industry in the Canadian economy.

Measured in relation to the country's population, the value of the per capita output of the mineral industry has risen from \$74.68 in 1950 to \$138.09 in 1960. The accompanying table illustrates the growth that has taken place in the metallics, industrial minerals and fuels sectors of the Canadian mineral economy during the past decade and the resultant increase in per capita value.

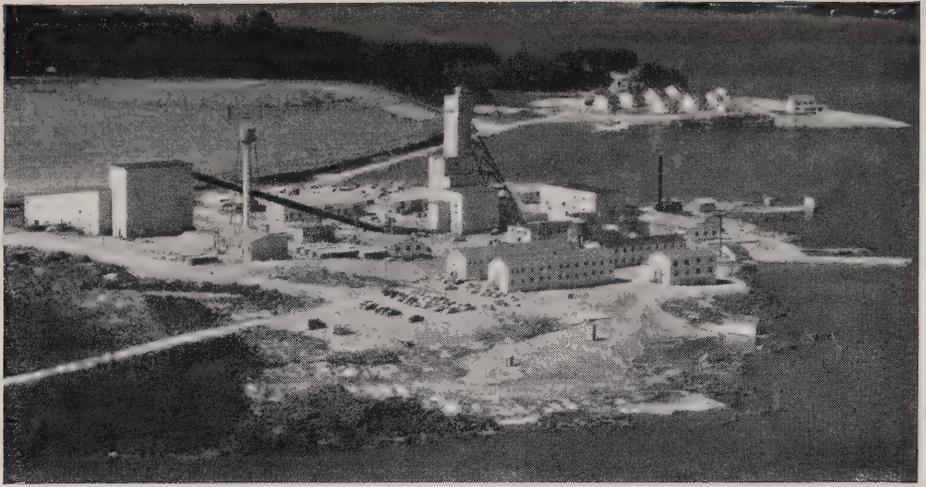
Canada's Mineral Production, by Type and Per Capita Value, 1950, 1955-60

Year	Metallics	Industrial Minerals	Fuels	Total	Per Capita Value
	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$
1950.....	617	227	201	1,045	74.68
1955.....	1,008	373	414	1,795	113.68
1956.....	1,146	420	519	2,085	129.65
1957.....	1,159	466	565	2,190	132.03
1958.....	1,130	460	511	2,101	123.22
1959.....	1,371	502	536	2,409	138.11
1960*.....	1,404	510	562	2,476	138.09

* Preliminary

The freighter *Murray Bay* leaving Sept Îles with a load of iron ore for export. Between 1950 and 1959, Canadian iron ore shipments increased from 3,200,000 to 21,900,000 long tons





A copper mine and mill at Chibougamau, Quebec.

Although the growth of the Canadian mineral industry in the past decade has been most impressive and although the prospects for the decade ahead are also very promising, the industry is confronted with some problems of major importance. These problems have arisen largely because of a growing abundance of mineral commodities as new world sources have come into production. The increase in the world supply of minerals has also tended to bring about an increasing degree of protectionism in the United States. Evidences of this protectionism are the restrictions on imports of lead and zinc, representations with respect to imposing restrictions on iron ore imports and the introduction of Bills to Congress to limit imports of various mineral commodities by means of either tariffs or import quotas. Restrictive measures on the part of any major importer of mineral commodities have a direct effect on the mineral industry of Canada. Although there is some indication of the development of protectionism in western Europe—the world's second largest mineral consuming area—through the establishment of the European Common Market and the European Free Trade Association, each of these trading blocks is deficient in most mineral raw materials and will increasingly rely on mineral imports. Canada's success in finding larger export markets in the future will depend greatly on increasing efficiencies in its mineral producing industry to meet the competitive prices of other world producers in European and other markets.

The Canadian mineral industry has taken giant strides since World War II in not only enlarging but also diversifying its output. In the forefront of new mineral operations have been the discovery and development of oil and gas fields in Western Canada; of immense iron ore deposits in Quebec, Labrador and Ontario; of uranium in Ontario and Saskatchewan; and of nickel in Manitoba. Further strengthening of the mineral industry will come about with the bringing into production of the copper-zinc orebodies in the Mattagami area of northwestern Quebec; the asbestos deposits in the Baie Verte region of northern Newfoundland; tungsten in the Northwest Territories; more iron ore deposits in Quebec, Labrador, and British Columbia; and additional oil and gas fields in Western Canada and the Northwest Territories.

Canada has already attained a prominent position in the world production of a large number of mineral commodities and leads the world in the production of nickel and asbestos. It is second in uranium, aluminum, gold,

silver, cadmium, platinum and platinum metals; third in zinc and gypsum; and stands high among the world producers of titanium, copper, iron ore, cobalt, magnesium and several other commodities.

In broad terms, 1960 might best be classed as a year of consolidation and mixed growth trends rather than of exploration and major discovery. The production of crude petroleum registered a 4 p.c. increase in deliveries from the record 184,778,497 barrels, valued at \$422,092,535, set in 1959. Natural gas output reached an all-time high of 504,452,000,000 cubic feet in 1960 compared with the previous high of 417,334,527,000 cubic feet in 1959. Shipments of coal registered the first production increase in that commodity for many years due mainly to higher shipments of coking coal to Japan. Among the metals, nickel and copper registered increased production in 1960 while lead and zinc output remained approximately the same as in the previous year. Declines were experienced in the production of iron ore and uranium. Asbestos output continued to increase while for most of the other industrial minerals such as cement, clay products and gypsum production declined somewhat.

The increase in production of natural gas, petroleum, nickel and to a lesser extent copper and asbestos, was largely responsible for the increase in the total value of metal output in 1960 from the previous record high of \$2,409,020,511 in 1959. The most significant changes in production are shown in the accompanying table.

International Nickel's project at Thompson, Manitoba, came into production during 1960; its nickel-producing capacity of 75,000,000 pounds per year will make that area the world's second largest source of nickel, following the company's Sudbury capacity of 310,000,000 pounds. Power for plant and townsite is obtained from the Manitoba Hydro-Electric Board's new plant at Kelsey, 53 miles away.



Mineral Production of Canada, by Kinds, 1959 and 1960

Mineral	Unit of measure	1959		1960 ¹	
		Quantity	Value	Quantity	Value
			\$		\$
Antimony	lb.	1,657,797	540,276	1,522,700	496,400
Bismuth	lb.	334,736	590,212	464,440	832,342
Cadmium	lb.	2,160,363	2,765,265	2,244,783	3,187,591
Calcium	lb.	67,429	76,409	76,560	88,770
Cobalt	lb.	3,150,027	5,954,916	3,330,914	5,669,560
Copper	lb.	790,538,660	233,102,813	876,766,931	264,336,899
Gold	troy oz.	4,483,416	150,508,275	4,602,762	156,171,715
Iron ore	ton	24,488,325	192,666,101	21,507,783	171,670,605
Iron, remelt	ton	...	7,187,434	...	10,922,801
Lead	lb.	373,391,461	39,616,835	378,533,595	40,427,281
Magnesium	lb.	12,204,448	3,179,515	14,746,427	4,280,232
Molybdenum	lb.	748,566	940,596	758,507	1,000,265
Nickel	lb.	373,110,226	257,008,801	427,282,898	312,738,234
Palladium, iridium, etc.	troy oz.	177,713	5,916,989	238,489	9,538,921
Platinum	troy oz.	150,382	11,015,449	221,832	18,134,766
Selenium	lb.	368,107	2,576,749	562,272	3,487,804
Silver	troy oz.	31,923,969	28,022,860	32,328,143	28,726,788
Tellurium	lb.	13,023	27,999	56,352	197,232
Thorium	lb.	47,447	105,676	129,894	381,314
Tin	lb.	747,443	630,094	515,300	541,065
Titanium ore	ton	26,777	129,565	1,700	12,000
Uranium (U ₃ O ₈)	lb.	31,784,189	331,143,043	25,034,889	262,935,404
Zinc	lb.	792,015,223	96,942,663	811,239,533	108,209,749
Totals, Metallics		...	1,370,648,535	...	1,403,987,738
Arsenious oxide	lb.	1,578,307	63,786	1,612,521	77,541
Asbestos	ton	1,050,429	107,433,344	1,140,538	118,700,998
Barite	ton	238,967	2,254,582	155,506	1,446,621
Diatomite	ton	5	100	5	100
Feldspar	ton	17,953	301,372	10,789	234,050
Fluorspar	ton	...	1,850,497	...	1,958,236
Gypsum	ton	5,878,630	8,393,703	5,161,000	9,308,340
Iron oxides	ton	1,235	108,286	865	80,000
Lithia	lb.	2,756,280	1,422,153	205,000	75,850
Magnesitic-dolomite and brucite	...	...	3,050,779	...	3,301,747
Mica	lb.	813,834	63,004	1,270,649	88,572
Mineral waters	gal.	369,113	202,969	368,000	202,000
Nepheline syenite	ton	228,722	2,930,932	249,200	3,030,300
Peat moss	ton	184,049	6,226,688	182,471	5,850,698
Potash, (K ₂ O)	ton	...	1,408,462	...	178,700
Pyrite, pyrrhotite	ton	1,099,564	3,433,095	1,004,366	2,828,267
Quartz	ton	2,163,546	3,436,730	2,235,795	3,322,824
Salt	ton	3,289,976	18,034,522	3,206,164	18,644,203
Silica brick	M	1,926	354,295	...	...
Soapstone and talc ²	ton	39,176	512,129	41,605	527,416
Sodium sulphate	ton	179,535	2,881,861	211,406	3,419,058
Sulphur in smelter gas	ton	277,030	2,716,416	271,615	2,644,982
Sulphur, elemental	ton	145,656	2,620,787	254,729	4,679,382
Titanium dioxide, etc.	ton	...	8,507,149	...	14,257,292
Totals, Non-metallics		...	178,297,641	...	194,857,177
Coal	ton	10,626,722	73,875,895	11,226,420	76,959,631
Liquid hydrocarbons	bbl.	...	...	...	5,852,422
Natural gas	M. cu. ft.	417,334,527	39,609,393	504,452,000	48,027,110
Petroleum, crude	bbl.	184,778,497	422,092,535	192,308,250	432,495,700
Totals, Fuels		...	535,577,823	...	562,434,863
Clay products (brick, tile, etc.)	...	...	42,515,448	...	40,042,494
Cement	ton	6,284,486	95,147,798	5,697,859	91,111,862
Lime	ton	1,685,725	21,304,021	1,533,673	17,037,970
Sand and gravel	ton	185,123,746	104,651,461	189,961,321	110,086,610
Stone	ton	46,439,535	60,958,784	43,404,986	56,678,612
Totals, Structural Materials		...	324,577,512	...	314,957,548
Grand Totals		...	2,409,020,511	...	2,476,240,506

¹Preliminary.²Includes pyrophyllite.

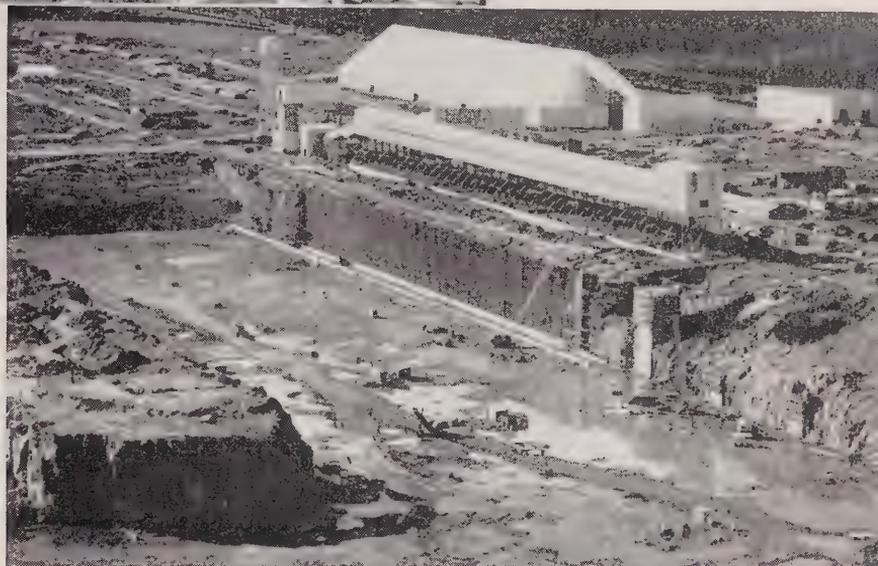
... Not applicable.



At Port Cartier, near the mouth of the St. Lawrence, a vast half-mile-long hole is being blasted out of solid rock to form one of Canada's deepest harbours which, with a depth of 56 ft., will be able to take 100,000-ton boats to transport iron ore brought 193 miles by rail from Lac Jeannine. To build the harbour, 6,500,000 yards of granite must be blasted and shovelled out.



Quebec Cartier iron mine and concentrator at Lac Jeannine, Quebec.

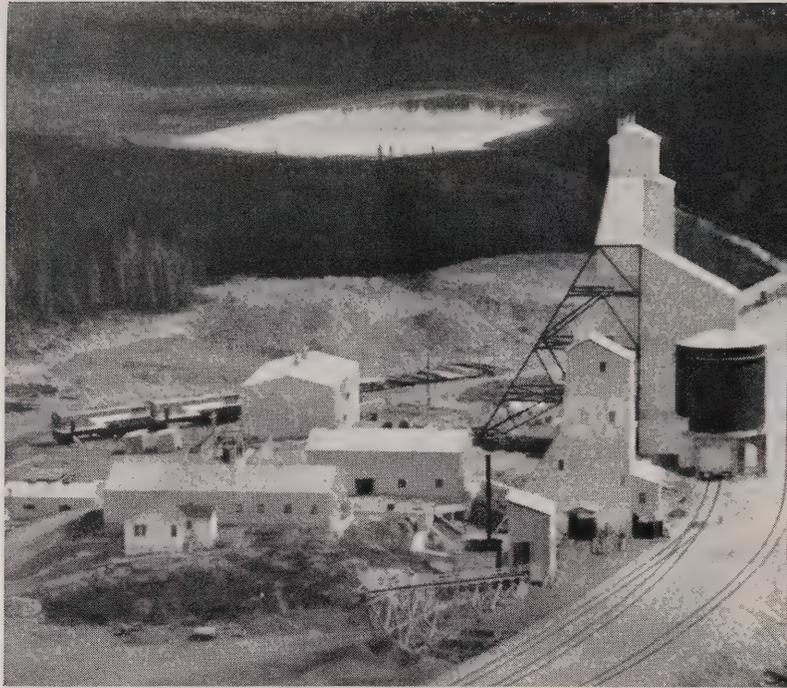


Metals

Uranium came third in the metal group in the value of output, making Canada second to the United States among world producers. When it was announced that options to purchase uranium concentrates beyond 1962 would not be exercised, Canadian producers instituted a "stretch-out" program of production so that some mines would be assured of output through to 1966. Some purchase agreements held by the smaller producers were sold to more strongly established companies and about one-half of the operating mines had ceased production by the end of 1960. Canadian reserves of uranium are the largest in the world but industrial applications for uranium have not advanced rapidly enough to consume the installed capacity for production. As a result, the outlook for uranium beyond 1966 is uncertain and annual production to the end of the stretch-out program in 1966 will be much reduced.

About 70 p.c. of the world's nickel (exclusive of that of the U.S.S.R.) is produced in Canada with by far the largest portion coming from the five mines of International Nickel Company of Canada Limited and the three mines of Falconbridge Nickel Mines Limited, all in the Sudbury area of Ontario.

The new mine at Chisel Lake, Manitoba, from which zinc, lead, copper, silver and gold will be recovered, was opened in September, 1960. Five miles away is the townsite of Snow Lake, abandoned in 1958 with the shutdown of a gold mine there and re-opened for the Chisel Lake miners.



Copper production established a new record total of 876,766,931 pounds, an increase of about 86,000,000 over the previous record year of 1959. Ontario is the leading copper producer with about 46 p.c. of the total output, followed by Quebec with about 36 p.c., and by Saskatchewan, British Columbia, Newfoundland, Manitoba and Northwest Territories, in that order.

Iron ore production in 1960 declined to 21,507,783 tons from the previous year's 24,488,325 tons, due almost entirely to reduced operations of the United States steel companies. The long-term prospects for iron ore production in Canada remained promising with an anticipated production of about 45,000,000 tons in 1965, rising to between 55,000,000 and 70,000,000 tons in 1970. Canada now ranks second after France among the world's iron ore exporting nations. There is no shortage of iron ore throughout the world; rather, the industry is reaching a stage of over-supply and competition for export markets will become more intensive.

Gold output in 1960 amounted to 4,602,762 ounces, valued at \$156,171,715 compared with 4,483,416 ounces, valued at \$150,508,275 in 1959. Ontario was again the main producer, accounting for about 59 p.c. of the total output, followed by Quebec with about 22 p.c. and the Northwest Territories and British Columbia with most of the remainder. As the year advanced the premium on the Canadian dollar in relation to United States currency decreased, with the result that the price of Canadian exports of gold increased from \$33.26 per troy ounce in February to somewhat in excess of \$34.00 during the latter part of the year. The Federal Government extended the Emergency Gold Mining Assistance Act for an additional three years to 1963. The Act has been in force since 1948 and assists gold mines whose average cost of production exceeds \$26.50 per ounce of gold produced.

The import quotas on unmanufactured lead and zinc imposed by the United States government on September 22, 1958 continued throughout 1960. The quotas limit imports of these commodities to 80 p.c. of their annual average for the five-year period from 1953 to 1957. Despite these import restrictions and the general world condition of over-supply, Canadian production of both lead and zinc showed moderate increases from the previous year's output of 373,391,461 pounds of lead and 792,015,223 pounds of zinc. Output of lead in 1960 was 378,533,595 pounds, valued at \$40,427,281 and that of zinc was 811,239,533 pounds, valued at \$108,209,749.



Four shot holes are made simultaneously by this "quad-drill", used in the construction of natural gas pipeline. The holes are tamped with explosives and detonated. In northern Ontario, granite first had to be blasted from the right-of-way to enable equipment to get through and then the five-foot-deep ditch was blasted out, mile by mile.

Fuels

Until recently the main emphasis in the fuels sector of the mineral industry was given to oil resource development, followed by natural gas and coal. During the past two or three years, however, natural gas development has begun to attract more attention as a result of the success in establishing markets for Western Canada natural gas not only in Canada but also in the United States. The general over-supply of crude oil and the resultant surplus reserve position have contributed to this shift in resource development. The end result has been a continuation of activity in the crude oil sector at or near the average level of the past several years and an increase in natural



Gas processing and sulphur plant at Pincher Creek, Alberta.

gas search. In 1960 the petroleum and natural gas industry's capital expenditures amounted to over \$650,000,000, which was about 10 p.c. more than was spent in 1959.

Production of petroleum reached a record level of 192,308,250 barrels, about 4 p.c. above the 1959 output. Alberta continued to contribute 68.7 p.c. of the total, Saskatchewan about 28 p.c., with the remainder coming from Manitoba, Ontario, British Columbia, the Northwest Territories and New Brunswick.

Net output of natural gas in 1960 at 504,452,000 M cubic feet was greater than that of 1959. Seventy-three p.c. of this came from fields in Alberta and the remainder chiefly from British Columbia and Saskatchewan.

Much of the gas produced in Alberta contained liquid hydrocarbons which must, in large part, be removed before the gas can be sold to pipeline companies. During 1960, gas processing plants turned out about \$5,852,422 of liquid hydrocarbons.

Although production of petroleum reached an all-time high, the rate of output was only one-half of the industry's potential. Discoveries of additional reserves of crude oil have more than kept pace with the industry's production capacity and at the end of 1960 reserves had been raised to approximately 3,800,000,000 barrels, about 10 p.c. more than in 1959. Additions to natural gas resources were at least as large as those of previous years and at the end of 1960 total reserves for Canada were close to 34,000,000,000 cubic feet.

In the processing phase of the industry, two new petroleum refineries went on stream in the spring of 1960. At the year-end, petroleum refining capacity was about 925,000 barrels daily, the fourth largest in the world after the United States, the U.S.S.R. and the United Kingdom. There were 36 natural gas processing plants in operation at the end of 1960, with an aggregate raw gas capacity of over 2,000,000,000 cubic feet daily. From this gas, a maximum of about 65,000 barrels of liquid hydrocarbons could be removed daily to supply refineries, petrochemical plants and the propane heating market.

The extent of natural gas usage in Canada is well illustrated by the number of customers being served by this premium fuel. At mid-1960, there were 1,135,000 natural gas customers in Canada, compared with 1,049,200 the previous year.

Coal output in 1960 increased slightly, however, for the first time in four years. Increased production is not only attributable to increased shipments to Japan of coking coal from the Crowsnest Pass area of Alberta and British Columbia, on which a freight subvention to Vancouver of up to \$5 per ton is paid by the Federal Government, but also to general increases in production in other provinces.

Non-Metallics

Canada continues to supply about 50 p.c. of the world's total requirements of asbestos while the Soviet Union supplies about 25 p.c. Other major producing countries are the Union of South Africa and Southern Rhodesia. About 90 p.c. of Canadian production comes from the southern part of Quebec from 13 producing mines at or near Thetford Mines, Black Lake, East Broughton, and Asbestos. The remainder comes from mines near Matheson, Ontario and Cassiar, British Columbia. Canadian Johns-Manville Company Limited operates the world's largest asbestos mine (the Jeffrey) at Asbestos in the Eastern Townships of Quebec. The mine is being changed from an open-pit and underground operation to an open-pit operation only which, when fully developed, will produce 30,000 tons of asbestos-bearing rock and 12,000 tons of waste daily.

Structural material output, which embraces sand and gravel, stone, cement, clay products and lime, showed a marked decline in value from \$324,577,512 in 1959 to \$314,957,548 in 1960, reflecting decreased activity in the building trades and in heavy construction. The rated annual output, of Canadian cement plants, as of December 31, 1960, was 5,697,859 tons, a decrease of 586,627 tons, or 9.3 p.c. under that of 1959. Until fairly recently Canada imported large quantities of cement, but now is a net exporter of this very important construction material.



A new salt mine in central Ontario.

Canada is becoming a major producer of sulphur through the development and production of natural gas in Western Canada and now ranks fifth in the world in production and consumption of sulphur in all forms.

Production of salt has experienced remarkable growth over the past several years. Output in 1960 was a production estimated at 3,206,164 tons, valued at \$18,644,203.

Gypsum production decreased to 5,161,000 tons, valued at \$9,308,340 in 1960 from the production record value of nearly \$8,500,000 established the previous year. Nova Scotia accounts for about 86 p.c. of the production with Ontario, Manitoba, British Columbia, New Brunswick and Newfoundland accounting for the remainder.

Mineral Production of Canada, by Province, 1959 and 1960

Province or Territory	1959		1960*	
	Value	Per cent	Value	Per cent
	\$		\$	
Newfoundland.....	72,156,996	3.0	84,357,384	3.4
Prince Edward Island.....	4,559,171	0.2	3,174,908	0.1
Nova Scotia.....	62,879,647	2.6	65,059,439	2.6
New Brunswick.....	18,133,290	0.8	19,038,175	0.8
Quebec.....	440,897,186	18.3	440,051,465	17.8
Ontario.....	970,762,201	40.3	984,024,964	39.7
Manitoba.....	55,512,410	2.3	56,787,574	2.3
Saskatchewan.....	210,042,051	8.7	213,387,595	8.6
Alberta.....	376,215,593	15.6	391,711,247	15.8
British Columbia.....	159,395,092	6.6	182,834,805	7.4
Northwest Territories.....	25,874,496	1.1	23,633,098	1.0
Yukon.....	12,592,378	0.5	12,179,852	0.5
Total.....	2,409,020,511	100.0	2,476,240,506	100.0

* Preliminary



The first of two plants has been completed in a \$20,000,000 iron and steel project to extract iron from the huge piles of tailings from the lead and zinc mine at Kimberley, B.C.



The Petawawa Forest Experiment Station at Chalk River, Ontario.

The Woods – Forestry

Canada's forests, covering almost half the total land area of the country, extend in an unbroken belt 600 to 1,300 miles wide from the Atlantic to the Pacific. They form one of the world's finest and most extensive forests and comprise a multitude of tree associations varying greatly in age and density, in diameter and height, from the mature stands of merchantable timber to the recently cut-over areas already partially stocked by nature with young growth. In addition to supplying raw material for our great lumber and pulp and paper industries, the forests control run-off and prevent erosion, provide shelter and sustenance for wildlife, and recreational facilities for people. The industries they support produce goods for home consumption and for export representing 12 p.c. of the net value of production of all the primary industries—forestry, mining, agriculture, fisheries, electric power and trapping. In short, the forests are one of Canada's greatest renewable resources, and it is this ability of the forest resource to renew itself that makes possible the continued existence of the Canadian forest industries.

Of the total forest area of Canada, about 58 p.c. may be classified as productive. The remaining unproductive areas are found chiefly along the northern edge of vegetation where the small size of the trees and the slowness of their growth combine to give them little potential value. The productive forest—that capable of producing continuous crops of wood of commercial value—covers an area of 1,000,000 sq. miles and of this area some 726,000 sq. miles are at present classed as accessible and carry an estimated supply of 589,000,000,000 cu. feet of merchantable timber.

Accessibility, however, is only a relative term. With the building of a road, a railway, a mill, or even a dam, inaccessible forests become accessible and the wood in them may be harvested economically. Nor does the term accessibility necessarily connote distance. There are sources of timber relatively close to industrial centres which remain untapped only because other areas lend themselves more readily to current demand for particular products and species. Of the accessible productive forest area, 55 p.c. is comprised of softwood types, 21 p.c. of mixedwood and 12 p.c. hardwood, the remainder being unclassified. There are more than 150 tree species in these forests, 31 of them conifers.

The major part of the forested area of the country is owned by the Crown, that is, by the people of Canada. Of the total forest classed as productive, 9.1 p.c. is privately owned, 19.1 p.c. is leased by the Crown to the forest industries, and approximately 71.7 p.c. is unleased Crown land. Thus every Canadian has a direct interest in the forests, their nature, their future and the wealth they create for the country. The provincial governments administer the Crown land within their boundaries except for National Parks and other areas under the jurisdiction of the Federal Government. The latter also administers the forests in nearly 1,500,000 sq. miles of land area in the Yukon and Northwest Territories.

Through appropriate management the productivity of the forest can be maintained indefinitely or even increased. Depletion by cutting, fire, insects, disease and natural mortality tends to reduce the volume of the growing stock, but average annual utilization, about 3,100,000,000 cu. feet, together with losses by fire, are still much less than the annual growth of the forests. Nevertheless, the drain on the forest is increasing, prompting governments and industry alike to plan for greater productivity by more intensive forest management, by harvesting over-mature forests and by restoring forest cover on millions of acres which were denuded by fire and overcutting, or which were cleared for agriculture and later abandoned. There is now much more efficient utilization of timber cut. More pulp and paper is produced from a cord of wood today than even a few years ago, and the use of more species brings greater returns per acre of woodland. More commercial products like alcohol, tanning liquor, road binders and turpentine are made from what were formerly waste materials in the production of pulp. The manufacture of rayon and cellulose products, plastic wood products, fibreboard, laminated wood and wood particle products is permitting the utilization of inferior grades of wood and species of trees.

Forest Industries

Canada has always been a great exporter of wood products. The products taken from the forests have far exceeded the needs of the present population and have become its most valuable export commodities. In fact, the forests are the source of over 30 p.c. of all Canadian exports, and of this pulp and paper products account for about 70 p.c.

The forest industries consist of woods operations, the lumber industry, the pulp and paper industry and the wood-using and paper-using groups of industries. The latter use partially manufactured wood, pulp or paper as their raw materials.

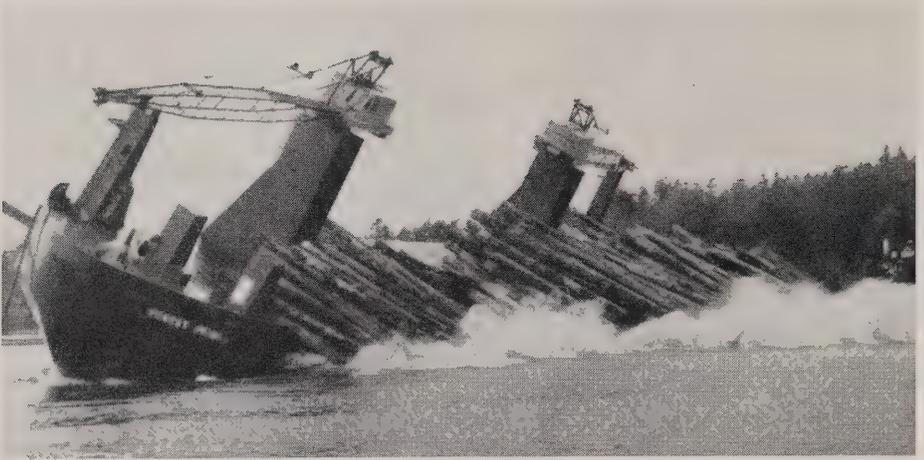


Strategically stationed observers watch for the dreaded wisp of smoke that warns of forest fires. During 1959, 5,383 forest fires destroyed 702,000 acres of forest, with 16 p.c. caused by lightning, 16 p.c. by railways, 15 p.c. by smokers, 14 p.c. by campfires and the remainder by a wide variety of other forms of human carelessness.

New methods of fire-fighting are always being sought. In British Columbia an aircraft fitted with huge tanks and dumping doors can scoop up 30 tons of water in 25 seconds while skimming over lake or sea and dump the whole load as a single deluge on a blazing fire. In Nova Scotia, flames are battled by ground patrols. In Saskatchewan, fire-fighters and their equipment are parachuted to fires in out-of-the-way places.



Education for prevention of fires is carried on continuously by provincial governments and private organizations. A train coach converted into a theatre on wheels to teach conservation was used for many years in the West, and now the Canadian Forestry Association operates two or three of these coaches over far-flung railway networks, laying special emphasis on the prevention of forest fires.



A self-dumping barge carrying 1,000,000 board feet of spruce and cedar discharges its cargo in three to four seconds on arrival at the booming grounds. Advantages over transport by deep-sea raft are that barges can be towed faster, there is less danger of losing logs in a storm and, since the logs spend less time in salt water, damage from insects is reduced.

Woods Operations. The harvesting of the forest crop has become in many areas a highly mechanized operation, with methods varying with the terrain and the character of the forest. West of the Rockies, operations are generally quite different from those in Eastern Canada. There the mild climate often permits year-round work in the woods, and the size of the trees and the rugged terrain require the use of costly, heavy, mobile mechanical equipment and good roads or water transport facilities. In eastern areas where the trees are smaller and the cutting of pulpwood predominant, woods operations are more seasonal and generally performed by workers who regard three or four months each year in the woods as part of their calling. Operations in the east are less highly mechanized but a strong tendency is evident there for more and more equipment to be used. The power saw is almost universally employed while the use of snowmobiles, heavy diesel trucks and tractors, mechanical loaders, log skidders and cable yarding equipment is becoming more common.

The output of Canada's forest in 1957 amounted to 3,172,000,000 cu. feet of solid wood, with products valued at \$823,054,498. This includes logs, pulpwood, bolts, fuelwood, poles, railway ties, and other primary products. Minor products include Christmas trees, cascara bark, balsam gum, resin, etc. Over 94 p.c. of the timber cut in 1957 was processed to some degree in Canada. Estimates of output for 1958 indicate a decrease of about 317,000,000 cu. feet from the 1957 figure.

With regard to volume of production of primary products, in 1958 logs and bolts were the most important products in Canada as a whole and in British Columbia, Alberta, Nova Scotia and in the Yukon and the Northwest Territories as well. Pulpwood was most important in all the other provinces except Saskatchewan and Prince Edward Island where fuelwood took the lead.

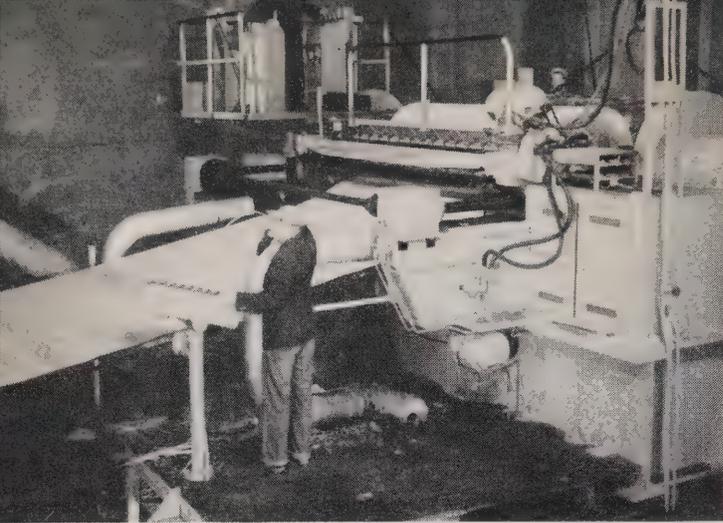
Lumber. The lumber industry in Canada is particularly dependent upon the general economic condition of the country and on the state of foreign markets. The effects of fluctuating demand are more noticeable in British Columbia than elsewhere in Canada because of the dependence of that province on the lumber industry. This is illustrated very clearly in the provisional figure for lumber production for 1959, which stands at 7,296,760,000 ft. b.m., fractionally higher than the 1958 figure of 7,179,080,000 ft. b.m. British Columbia production was down by 6 p.c., but the other provinces, except Saskatchewan and Alberta, recorded increased production, New Brunswick by as much as 39 p.c., Manitoba and Prince Edward Island by more than 24 p.c. each, Nova Scotia by 17 p.c., Quebec by 16 p.c. and Ontario by 10 p.c.

Canadian sawmills vary greatly in size and in product. Some, particularly in British Columbia, are capable of cutting up to half a million feet board measure in a single shift. Others are small enterprises turning out one or two thousand feet a day. Spruce continues to lead Douglas fir in quantity sawn but the position is reversed when market values are computed. These varieties are closely followed, in volume, by hemlock, cedar, white pine and jack pine, balsam fir, yellow birch and maple.

There were 5,769 active sawmills of all kinds in Canada in 1958, a drop from 6,276 in 1957. They employed 47,763 employees who earned \$142,700,044 in salaries and wages. The industry produced 7,179,080,000 ft. b.m. of lumber with a gross value of \$459,900,750. About 64 p.c. of this production was exported at a value of \$293,600,203.

Sawmills at Port Alberni, B.C. More than 60 p.c. of the sawn lumber produced in Canada in 1959 came from British Columbia. More than half the total lumber produced was exported, most of it to the United States. The United Kingdom received about 5 p.c. in contrast to its pre-war consumption of 27 p.c. of Canadian production.





A long ribbon of veneer leaves the lathe in this typical scene in a plywood mill. The honed steel blade of the lathe, carefully applied to selected Douglas fir logs, peels away hundreds of years of growth in a thin, uniform layer. Layers of veneer are bonded together with waterproof glue at a temperature of 285°F. and under a pressure of 200 pounds per square inch.

Pulp and Paper. The manufacture of pulp and paper has been Canada's leading industry for many years. It stands first among all industries in value of production, in exports, in total wages paid and in capital invested. It is the largest consumer of electric energy and the largest buyer of goods and services in the land. The industry has a newsprint capacity of more than three times that of any other country and provides nearly 50 p.c. of the world's newsprint needs. Canada is one of the world's greatest pulp exporters and stands second only to the United States as a producer of that product.

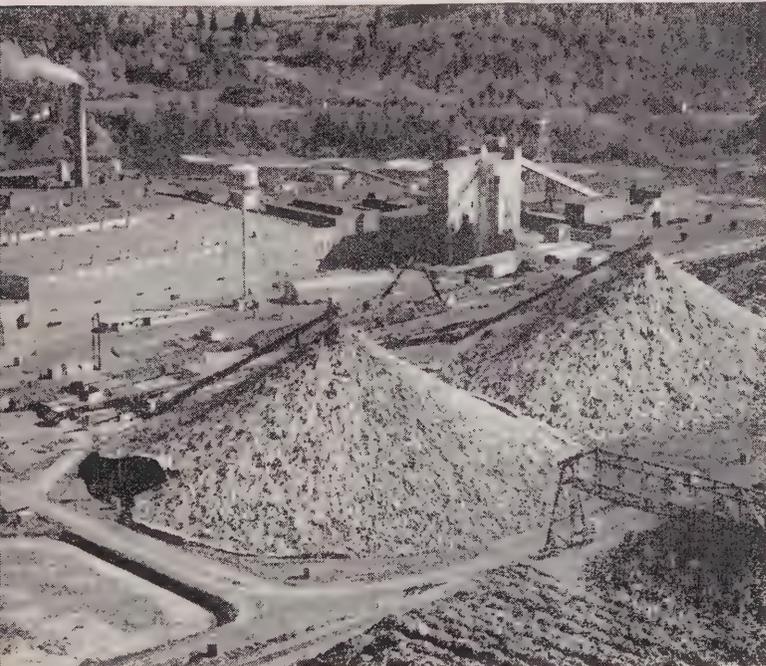
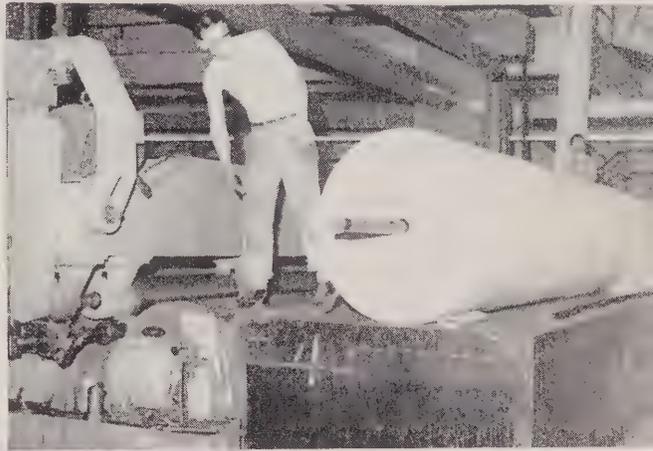
The industry includes several forms of industrial activity—operations in the woods and the manufacture of pulp, paper of all kinds and paperboard. In 1958 there were 30 mills making pulp only, 24 were making paper only and 74 were combined pulp and paper mills, some of the latter being completely integrated establishments conducting all operations from cutting to the final product of newsprint, wrapping paper, fine papers, tissues, cartons, paperboard or other wood fibre, and cellulose products. About 73 p.c. of the pulp manufactured was converted to other products in Canada; the remainder was shipped abroad. Newsprint is the top product, forming 75 p.c. of the total volume of paper and 95 p.c. of the amount of paper and paper goods exported in 1958. Quebec and Ontario together accounted for 74 p.c. of the newsprint production.

Principal Statistics of the Pulp and Paper Industry, 1930, 1940, 1957 and 1958

Item	1930	1940	1957	1958
Establishments..... No.	109	103	128	128
Employees..... "	33,207	34,719	65,940	64,084
Salaries and wages..... \$	45,774,976	56,073,812	307,627,849	307,415,615
Gross value of factory shipments..... \$	215,674,246	298,034,843	1,411,934,462	1,394,679,180
Value added by manufacture..... \$	107,523,731	158,230,575	693,475,562	702,950,789
Pulp produced..... tons	3,619,345	5,290,762	10,425,295	10,137,454
	\$ 112,355,872	\$ 149,005,267	\$ 706,194,649	\$ 703,365,594
Paper produced..... tons	2,926,787	4,319,414	8,299,889	8,081,293
	\$ 173,305,874	\$ 225,836,809	\$ 1,056,371,332	\$ 1,044,640,200
Pulp exported..... tons	760,220	1,068,516	2,282,656	2,219,314
	\$ 39,059,979	\$ 60,930,149	\$ 292,406,102	\$ 285,448,649
Newsprint exported..... tons	2,332,510	3,242,789	5,900,625	5,682,832
	\$ 133,370,932	\$ 151,360,196	\$ 715,489,761	\$ 690,209,468

Wood-Using Industries. This group includes thirteen industries, other than sawmills and pulpmills, using wood as their principal raw material. In 1958, these industries, comprising 4,079 establishments, gave employment to 73,159 persons and paid out \$226,881,505 in salaries and wages. The gross selling value of their products was \$797,294,220. The furniture industry (which includes metal furniture as well) accounted for \$308,815,752 of the total output, the sash, door and planing mills industry for \$236,990,148, the veneer and plywood industry for \$129,954,480, and the hardwood flooring industry for \$17,736,175. The other industries making up the remaining \$103,797,665 included: boxes, baskets and crates; wood-turning; morticians' goods; cooperage; woodenware; lasts, trees and wooden shoefindings; beekeepers' and poultrymen's supplies; excelsior; etc.

Paper-Using Industries. Three industries engaged primarily in manufacturing commodities of paper and paperboard constitute this group, which in 1958 comprised 434 establishments, employed 28,851 persons and distributed \$102,162,620 in salaries and wages. The gross value of factory shipments was \$494,781,213 and the net value \$207,742,359. The paper box and bag industry contributed products valued at \$277,464,661 to the total output, the roofing paper industry \$45,892,999, and the miscellaneous paper goods industry \$171,423,553.



In this huge paper mill at Fort William, Ontario, is the largest paper-making machine in the world. It has a width of 343 inches, potential speed of 2,250 feet per minute and a Canadian record production of 388 tons of newsprint in 24 hours operation. Above, two workmen prepare to extract the steel core on which the great roll is wound. Already cut to newspaper requirements, it produces $5\frac{1}{2}$ such rolls every 15 minutes.



An Alberta stockman moves his Hereford cattle to summer grazing lands.

The Land—Agriculture

Available arable land is limited in Canada, in the main, by topography and climate. The Precambrian Shield occupies about 50 p.c. of the total land area, the Cordilleran Region another 14 p.c. and other rough lands about 10 or 15 p.c. As might be expected, considering the extent and location of the country, it is a land of many climates. The landscape varies from frigid, wind-swept barrens, hot, sun-ripened grain fields, dusty, scanty grasslands, to wet, heavily forested slopes. In a general way, these climates and vegetative zones have influenced the development of the several soil zones, a factor that further limits the availability of arable land.

Since Canada's first settler undertook to wrest a farm from the wilderness almost three and a half centuries ago, a little more than 174,000,000 acres have been occupied through agricultural settlement. These 174,000,000 acres of improved and unimproved farm land, which account for only 7.7 p.c. of the country's total land area, are scattered along the international border in segments. The interaction of physical factors such as topography, soil and climate, as well as economic factors, has resulted in the development of an agriculture quite distinctive for each of the four main agricultural areas, the Atlantic Region, the Central Region, the Prairie Region and British Columbia.

The Atlantic Region. Agricultural practices in the four Atlantic Provinces are determined in large measure by the Canadian Appalachians, the fold mountains extending from Newfoundland through the Maritimes and south-

east Quebec. This complex mass of mountains is characterized by subdued topography, rivers lined with terraces, particularly valuable for cultivation, and fertile plains in the fold belts. There are, however, marked differences in stages of agricultural development, types of farming and farming methods in the four Atlantic provinces.

Until recent years agriculture in Newfoundland has been designed to supplement the income from fishing. More recently, as urban markets and employment opportunities increased, this supplementary and non-commercial agriculture has been disappearing, while the purely commercial type has been gradually expanding.

The climate of the island, with its short cool moist summers, places limitations on the kinds of crops that can be grown, as does the scarcity of arable land. Less than one p.c. of the total land area is now in farm lands and this is in relatively small patches often widely separated. It is only in a few areas that any real continuity of settlement is possible.

Since 1944 about 1,000 acres of land have been cleared each year under a government sponsored program, but even so, the average Newfoundland farm consisted, in 1956, of 31 acres of which 8 acres were improved.

Although its total area and therefore its agricultural potential is distinctly limited (1,400,000 acres), no province in Canada is as completely dependent on agriculture as Prince Edward Island because its resources are, in the main, suitable for agricultural production, and non-agricultural resources are practically non-existent.

Mixed farming which includes several livestock enterprises is practised in Prince Edward Island, with major emphasis being placed on the production of dairy products, hogs, eggs and potatoes.

The soil and climate are well suited to potatoes and potato growing has proved relatively profitable over a long period. The 1956 potato acreage averaged about 6 acres per farm.

Although the physical factors confronting agriculture in Nova Scotia and New Brunswick are similar in many respects to those in Prince Edward

An aerial view of Hants County Exhibition at Windsor, N.S., where Canada's first agricultural fair was held in 1765. The annual fall fair is the most important event of the year to farming communities, for it provides a showcase for livestock, produce and handicrafts, an arena for contests of skill and strength and an opportunity for social activities.



Island, the natural opportunities for agricultural development are more limited. A little less than one-fifth of the total land area is arable and only slightly more than one-quarter of the farm lands are improved. In addition, there is a lack of continuity and compactness of farming territory that contributes to difficulties in marketing and administration of farm policies. Another factor is the preponderance of subsistence and part-time farmers. The 1956 Census showed that half of the farms in these two provinces fell into this category and, generally speaking, types of farming followed by this group change very little and fit in with non-farming work programs such as fishing or forestry operations. Part-time farming activities attempted are, in the main, poultry keeping, sheep raising, beekeeping, and, sometimes, a small hog-raising enterprise.

Commercial farms have developed a type of mixed farming in recent years which combines livestock or cropping enterprises with special emphasis on the production of potatoes, apples or dairy products in specific areas. While most commercial farms are of this category, there have been some notable changes in recent years. Some of the largest and most highly specialized poultry farms in Canada have been developed in the Annapolis Valley. The recent reclamation of the marshlands and the establishment of a second slaughter plant in the area at Halifax have resulted in further livestock output. These developments may eventually result in the Maritime region becoming self-sufficient in livestock products.

The Central Region. Agricultural settlement in the two central provinces of Ontario and Quebec is confined largely to the St. Lawrence Lowlands, an area flanking the Shield to the south and southeast. Located in the most southerly part of Canada, the area has a varied but favourable climate and good productive grey-brown soils. Although the Lowlands comprise Canada's smallest agricultural region, commercial agriculture in the area is highly developed and accounts for almost half of Canada's cash farm income.

North of the Lowlands there are isolated sections with suitable soil and topography where agriculture is being developed. Unlike the Lowlands, agriculture in these northern settlements is, in the main, mixed farming, often combined with off-farm work such as forestry or mining.

Agriculture in these provinces is diversified, yet specialized production has been highly developed, with dairying the most important specialized agricultural activity, fostered by close proximity to large urban markets combined with satisfactory physical attributes.

In addition to relatively large acreages of grass, feed and fodder crops to support the livestock and dairy enterprises, a large number of cultivated crops are produced, particularly vegetable crops for processing. Canadian tomato and pea production is centred mainly in Ontario, with considerable acreage also in Quebec. Potato production holds an important place in the counties adjoining both Toronto and Montreal. The greatest concentration of green-houses in Canada is to be found in the Toronto district and southwestern Ontario.

In addition to the more general farm crops, specialized crops are of considerable importance to the Quebec-Ontario region. About 90 p.c. of Canada's flue-cured leaf tobacco is grown in Ontario and the remainder in

The area in occupied farms in Ontario and Quebec is approximately 36,000,000 acres, about 6.5 p.c. of the total land area. These farms average 137 acres in size.



Prairie farms average one square mile (640 acres) in area; Saskatchewan is the leading wheat-producing province, with Alberta and Manitoba following in that order.

The agricultural industry in Canada is made up of almost 600,000 production units, varying greatly in size and organization.

Quebec. Sugar beets are grown around St. Hilaire, Quebec, and Chatham and Wallaceburg, Ontario. Other crops grown in the region are seed crops, fibre flax, hops and soybeans.

The St. Lawrence Lowlands area also has a highly developed specialized tree fruit industry. Apple production is general throughout southern and eastern Ontario and in Quebec to an area south and east of Montreal. The soft fruit area in the Niagara Peninsula has, since the end of World War II, been reduced substantially by urban development and new highway construction. As these lands have been taken out of fruit production, growers have undertaken to develop new orchards elsewhere in the southern part of Ontario.

Farms in Ontario and Quebec are largely owner-operated. A few corporate farms have been established but, with very few exceptions, these are family farms which have adopted the corporate structure in order to keep pace with changing business practice. Other developments are fewer but the trend is toward larger farms with increased specialization by reducing the number of farm enterprises per farm.

The Prairie Region. Nearly three-quarters of all the occupied farm land in Canada is located in the three prairie provinces and peculiar conditions of soil and climate combine to make this one of the great grain-growing areas of the world. The prairie region is semi-arid with annual precipitation ranging from 10 to 20 inches, about two-thirds of which falls during the growing season. To the north of the prairie grain-growing belt lies the park belt, where rainfall is more abundant, tree cover is more in evidence and conditions favour mixed farming.

Agriculture is the most important industry in the prairie provinces and occupies the time of one-third of the people gainfully employed in the region.

Prairie farms account for almost half of Canada's farm cash income and employ about 40 p.c. of the Canadian agricultural labour force.

Wheat occupies the greatest part of the land in field crops, while oats and barley are of more relative importance on the parkland soils.

Although the prairies are predominantly a grain-growing region, livestock has become more important in recent years. This can be attributed to attempts by farmers to offset the effects of wheat marketing quotas, the "cost-price squeeze" and the chronic problems associated with climate and other natural hazards by adding supplementary livestock enterprises. However, cattle and sheep ranching have been long established in the Rocky Mountain foothills of Alberta, southeastern Alberta and southwestern Saskatchewan.

A few dairy farms are located near each of the main urban centres. Hog production, although scattered throughout the prairies, is concentrated mainly in the park belt.

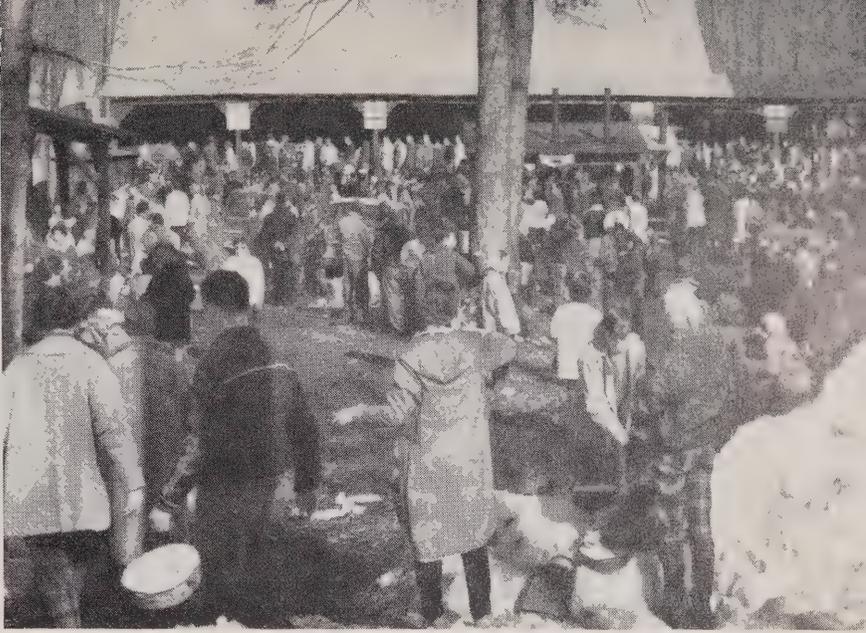
British Columbia Region. The far western province of British Columbia forms the fourth agricultural region, separated from the rest of the country by the Rocky Mountain range and other mountains. It is a region of sharp contrasts and wide variations in soil, climate and agricultural possibilities.

The extremely rough topography of the province explains the limited area of arable land, its many widely separated segments of various sizes and shapes and its location in river valleys and coastal plains. Both climate and soil type have a marked effect on the development of various types of farming in British Columbia. Along the coast rainfall is heavy, temperatures moderate and the growing season relatively long. In the fertile valley of the Lower Fraser River general mixed farming and special enterprises such as dairying flourish. The high interior plateaus support a grazing industry under semi-arid conditions. In the interior mountain valleys in southern British Columbia irrigation has transformed a virtual desert into the richest fruit-producing area in Canada. Far to the north in the Peace River Block farming conditions are more nearly like those in the northern prairie area where grain-growing and mixed farming predominate. On Vancouver Island, the mild, almost sub-tropical climate of the southern part permits the cultivation of crops which cannot be grown elsewhere in Canada. Fruits and vegetables, flowering bulbs and seeds are all produced commercially along with other specialized crops. General farming is also practised. In the main, the region is one of small farms, more than half the total number being less than 50 acres in extent.

British Columbia outstrips all other provinces in apple production; the Okanagan Valley as a whole is famous for its fruit farms. In addition to apples, such other tree fruits as peaches, plums and cherries are grown extensively, as well as pears, grapes, strawberries and raspberries. The major berry-growing districts are on Vancouver Island and in the Fraser Valley, the only areas in Canada where loganberries are grown commercially.

Vegetable and market gardens are found close to urban centres and the principal vegetable crops are tomatoes, green peas, onions, sweet corn, and carrots. The delta of the Fraser River also has considerable potato acreage.

The "sugar bush" is a popular place for visitors in the early spring when maple syrup, maple sugar and maple candy can be sampled. In 1960, 2,676,000 gallons of maple syrup and 430,000 pounds of maple sugar were produced in eastern Canada.



Dairying, either alone or in combination with other livestock and poultry, is the major type of farm enterprise in the lower mainland area and on Vancouver Island.

Farm Income

From the standpoint of the farmer, agricultural production is undertaken for two basic reasons, (1) to satisfy directly a part or all of his need for food and other products of the farm, such as wool and wood, and (2), to provide something which he may sell in order to obtain those goods and services required for family living and for production which he is unable or unwilling to supply directly himself. The farm value of those products sold off the farm is designated as farm cash income from the sale of farm products. The value of those products retained for home consumption, together with the imputed rental value of the farm house, is called income in kind. The total value of those farm products which are consumed or converted into cash through sale and the imputed rental value of farm homes are considered to be realized gross income; the term "gross" is used to indicate that no allowance has been made for the costs of production. In some years farm production may exceed the amounts consumed and sold and the excess must be stored on farms until final disposition can be made. Although this excess is not immediately realizable, it does represent a potential income for the future and as such it is considered as a part of total gross income from farming operations for the year under consideration; thus total gross farm income is the sum of realized gross income and the value of changes in farm-held stocks of agricultural produce.

From time to time farmers may consume and sell more in a year than they produce by drawing on storage stocks accumulated from previous years. Under these circumstances, estimated total gross income from farming operations for the year will be realized gross income, less the value of the accumulated stocks from previous years which were consumed and sold. By deducting total operating expenses and depreciation charges from these two concepts of gross farm income, figures are obtained for realized net farm income and total net farm income. In addition to income from farming operations, and this includes any subsidies paid as a result of farm production, farmers can



A new use for aircraft: spreading of dry fertilizer. A plane can cover about 600 acres per day. Planes are used extensively by farmers for supervision of farms and spraying of crops.

receive government transfer payments such as those made under the provisions of the Western Grain Producers Acreage Payment Regulations and the Prairie Farm Assistance Act. Payments of the latter kind are not associated directly with farm production but are included with cash income from the sale of farm products under the heading, "Supplementary Payments".

Of the farm income components and combinations mentioned above, the most important are cash income from the sale of farm products, realized net farm income, and total net farm income. These estimates of income moved up rapidly during 1951 and 1952 to record high levels which have not since been equalled, although cash income from the sale of farm products at \$2,813,300,000 in 1958 was only 1.6 p.c. below the 1952 record of \$2,859,100,000. Both realized net farm income and total net farm income established records in 1951 of \$1,645,600,000 and \$1,937,000,000 respectively. A combination of events contributed to this development. Farm prices reached an all-time high while production of farm products up to that time was second only to the bumper production of 1942. This combination of high prices and expanded production resulted in a significant increase in farm cash income and additions to year-end farm inventories which more than offset a continuing rise in farm expenses. Total cash income advanced to its peak in 1952 when total production broke the previous record of 1942. Total net income might have established a new record in this year had not farm prices declined and operating expenses continued to increase. Farm prices declined during the next three years and by 1955 cash income was down to \$2,350,200,000. This coupled with steadily rising operating expenses resulted in a realized net income of \$1,078,100,000 for the same year, the low point for this figure during the fifties. Total net farm income reached its low level in 1954. Although prices were down, there was also a significant reduction in farm production. Rust damage reduced both quantity and quality of the western grain crop and farm inventories declined for the first time since 1949.

By the years 1958 and 1959, farm cash income had risen once again to a level of approximately \$2,800,000,000, only slightly below the record high of 1952. While cash returns from field crops during the latter years declined substantially from the levels of the early fifties, this reduction was almost entirely offset by increased income from livestock and livestock products.

In addition, supplementary payments had gained in importance. Present indications suggest that cash returns for 1960 may maintain this high level. Parallel with the achievement of high levels of cash income in recent years has been the almost uninterrupted climb in farm expenses to an unprecedentedly high level, which has held net income below the high levels of 1951, 1952 and 1953. This, together with some fairly substantial reductions in farm-held inventories, have resulted in figures for total net income well below the level of these earlier years. Again, present indications suggest that both realized and total net income for 1960 are likely to remain close to the levels of the past two years.

Net Income of Farmers from Farming Operations, 1957-59

Item	1957	1958	1959
	\$'000	\$'000	\$'000
1. Cash income.....	2,573,341	2,813,299	2,786,006
2. Income in kind.....	328,069	340,071	342,686
3. Supplementary payments.....	1,987	60,128	22,087
4. Realized gross income (1 + 2 + 3).....	2,903,397	3,213,498	3,150,779
5. Operating and depreciation charges.....	1,706,439	1,795,815	1,890,494
6. Realized net income (4 - 5).....	1,196,958	1,417,683	1,260,285
7. Value of inventory changes.....	-138,690	-64,621	-68,415
8. Total gross income (4 + 7).....	2,764,707	3,148,877	3,082,364
9. Total net income (8 - 5).....	1,058,268	1,353,062	1,191,870

On the basis of averages for the five-year period 1955 to 1959, about 90 p.c. of Canadian farm cash income originates in the five central provinces: Ontario, Quebec, Manitoba, Saskatchewan and Alberta. Ontario alone accounts for nearly one-third of the Canada total. Prairie farmers receive about one-half of their farm income from the sale of field crops, whereas farmers in the remainder of the country obtain only about 20 p.c. of their farm cash returns from this source. During this period, for Canada as a whole, returns to field crops averaged approximately 35 p.c. of total cash income and livestock and livestock products about 60 p.c. The remainder of the total was made up of income realized from the sale of products from the farm woodlots.

Cash Income from the Sale of Farm Products, by Province, 1957-59

Province	1957	P.C. of Total	1958	P.C. of Total	1959	P.C. of Total
	\$'000		\$'000		\$'000	
Prince Edward Island...	24,476	1.0	27,792	1.0	28,323	1.0
Nova Scotia.....	41,956	1.6	41,656	1.5	42,941	1.6
New Brunswick.....	43,897	1.7	45,922	1.6	44,692	1.6
Quebec.....	383,341	14.9	423,644	15.1	420,938	15.1
Ontario.....	790,199	30.7	872,283	31.0	867,302	31.1
Manitoba.....	199,767	7.8	221,998	7.9	223,019	8.0
Saskatchewan.....	537,282	20.9	573,352	20.4	559,326	20.1
Alberta.....	436,346	16.9	484,697	17.2	476,774	17.1
British Columbia.....	116,077	4.5	121,955	4.3	122,691	4.4
TOTALS.....	2,573,341	100.0	2,813,299	100.0	2,786,006	100.0

Field Crops

The area of field crops in Canada in 1956 was 62,500,000 acres. This was made up of 22,800,000 acres of wheat, all but 700,000 of which was grown in the Prairie Provinces. Oats, barley, mixed grains and other feed grains accounted for 22,400,000 acres, the prairie region having 17,000,000 acres of this total. The area of oilseed crops—flaxseed, sunflower, rape and mustard seed—occupied 3,530,000 acres almost all of which was grown in Manitoba, Saskatchewan and Alberta. These provinces also had 75 p.c. of the 80,000 acres in sugar beets, but only about 28 p.c. of the 11,300,000 acres of hay and other forage crops. In all, the prairie region had 46,800,000 acres in field crops in 1956.

The total annual value of production of field crops in Canada in recent years has been close to \$1,500,000,000. Cash sales have amounted to about \$1,000,000,000 and the remaining value has been fed on the farms where the crops were grown or carried over for sale to other years. Of the amount sold off farms some is bought by other farmers in feed-deficit areas.

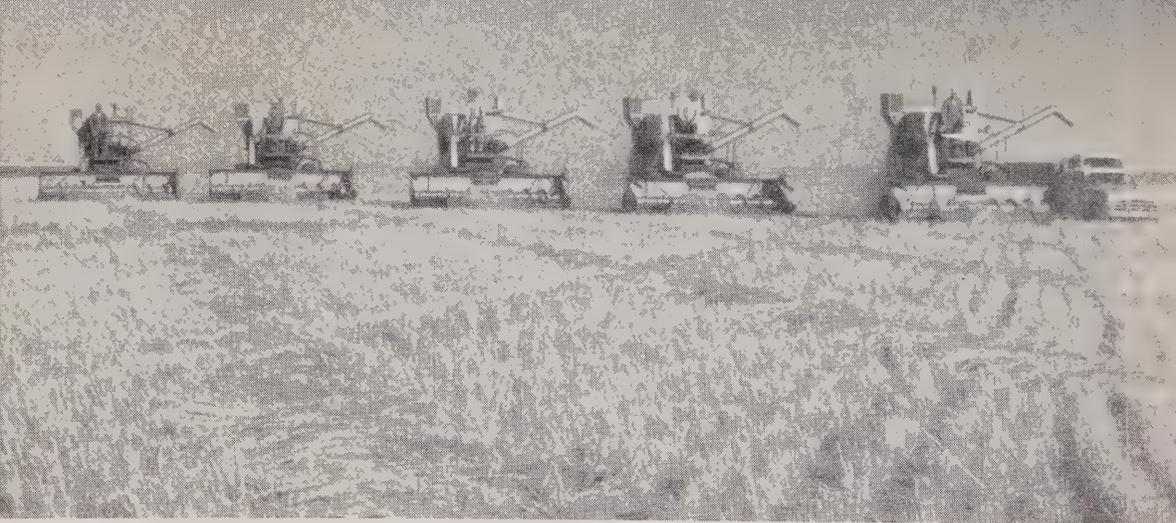
In central Canada (Ontario and Quebec) there were 13,500,000 acres in field crops. Hay and other fodders made up 7,400,000 acres, wheat 700,000 acres, and feed grains, including corn, 4,640,000 acres. The remaining area was devoted to special crops such as soybeans, field beans, peas, potatoes, tobacco and sugar beets.

The Atlantic Provinces and British Columbia had 1,700,000 and 390,000 acres respectively in field crops in 1956. Over half the area in the Atlantic Provinces was in hay and other fodder crops, while in British Columbia practically three-quarters was in hay. The potato crop is the important field crop in the Atlantic Provinces accounting for over 100,000 acres.

Several significant changes have occurred between 1956 and 1960 in areas of various field crops. Hayland area has increased by 1,300,000 acres of which 78 p.c. is in the Prairie Provinces, where rapeseed acreage has also increased by 200,000 acres. On the other hand acreage sown to feed grains

Most of the flue-cured cigarette tobacco is grown in Ontario, while pipe and cigar tobaccos are produced mainly in Quebec.





Wheat being harvested by five combines at once. These belong to a company which harvests by contract.

in the prairies has decreased by nearly 500,000 acres while wheat acreage has increased by the same amount. Acreage of individual crops in Ontario and Quebec has changed very little since 1956, the chief differences being a decline in wheat and an increase in oats and hay. In the Atlantic Provinces and British Columbia some decline in grain acreage has taken place, while in British Columbia, particularly, acreage in hay has increased.

Crop yields were average or better in Canada in 1960 and harvest conditions were favourable, resulting in grain being stored in dry condition. New records were set in the production of hay and rapeseed. A larger than average potato crop was also harvested.

Canada still has a huge supply of wheat in excess of export and domestic needs. The carryover at July 31, 1960 amounted to 536,220,000 bushels, and the addition of the new crop placed total supplies at 1,025,844,000 bushels for the 1960-61 crop year. Estimated domestic needs are between 150,000,000 and 160,000,000 bushels and it is not expected that more than 300,000,000 will be exported, leaving in the neighbourhood of 566,000,000 bushels for carryover in the crop year 1961-62.

Canada's 1959-60 crop year exports of the five principal grains, together with grain equivalent exports of wheat flour, rolled oats and oatmeal, malt and pot and pearl barley, totaled 364,500,000 bushels, seven p.c. less than the 1958-59 total of 390,000,000, 10 p.c. below the ten-year (1948-49—1957-58) average of 404,700,000 but 13 p.c. greater than the long term (1928-29—1957-58) average of 323,200,000 bushels. The 1959-60 shipments were made up of 234,700,000 bushels of wheat, 5,600,000 of bagged seed wheat, 37,400,000 of wheat flour (expressed in terms of wheat equivalent), 5,600,000 of oats, 500,000 of rolled oats and oatmeal (grain equivalent), 57,700,000 of barley, 6,100,000 of malt and pot and pearl barley (grain equivalent), 4,500,000 of rye and 12,500,000 bushels of flaxseed.

The United Kingdom, although remaining in its position as Canada's principal market for wheat in bulk, decreased purchases of Canadian wheat from 87,000,000 bushels in 1958-59 to a total of 80,000,000 during 1959-60. Shipments to the Federal Republic of Germany, at 24,900,000 bushels and to India, at 4,800,000, were both sharply reduced from the 1958-59 levels of 35,000,000 and 11,400,000 bushels, respectively. At the same time, exports



A Japanese family enjoys bread made from Canadian wheat flour.

of wheat to Japan were the largest ever, and amounted to some 45,700,000 bushels compared with 41,000,000 in 1958-59. The United Kingdom, with imports amounting to the equivalent of 14,000,000 bushels, accounted for 37 p.c. of the total crop year movement of wheat flour, compared with the equivalent of 13,900,000 bushels in 1958-59. No major changes were reported in the quantities taken by principal importers although moderate gains occurred in several markets.

The Canadian Wheat Board, a Crown corporation in operation since August 14, 1935, is the general agency for all wheat, oats and barley produced in Western Canada and sold commercially for interprovincial or export movement. The farmer places these grains in annual marketing pools operated by the Board. He receives an initial payment at the time he delivers the grain at a country elevator or into a railway car and participates on the basis of his grain deliveries in any surplus the Board may subsequently realize on the sale of grain. Through the provision of an initial price guaranteed by the Government of Canada, the Board stands as a buffer between the farmer and the constantly changing conditions of supply, demand and price under which wheat is produced in Western Canada and throughout the world. At the same time, the distribution of participation payments carried out from time to time helps to steady the flow of farm income and to spread it throughout the year.

The moon-faced sunflower is rising in popularity as a cash crop. Its oil can be used in vegetable fats, soaps, cosmetics and paints; its seeds in poultry and bird feeds; its stalks as ensilage. In 1960, 40,000 acres were planted to sunflowers.



The initial payment set by the Wheat Board in the 1958-59 crop year was \$1.40 per bu. basis No. 1 Northern, in store Fort William-Port Arthur or Vancouver. The initial payment for No. 1 C.W. Amber Durum was also \$1.40 per bu. The 1957-58 pool account was closed on May 15, 1959, with producers averaging about \$1.62 per bu. for No. 1 Northern wheat.

Estimated Area, Yield and Production of Principal Field Crops, 1959 and 1960

Crop	Area		Yield per Acre		Production	
	1959	1960	1959	1960	1959	1960
	acres	acres	bu.	bu.	bu.	bu.
All wheat.....	23,064,900	23,198,200	17.9	21.1	413,520,000	489,624,000
<i>Winter wheat</i>	425,000	525,000	29.3	33.5	12,464,000	17,570,000
<i>Spring wheat</i> ¹	22,639,900	22,673,200	17.7	20.8	401,056,000	472,054,000
Oats for grain.....	11,391,300	11,146,700	36.7	40.9	417,933,000	456,134,000
Barley.....	8,288,600	7,359,700	27.2	28.1	225,550,000	207,036,000
All rye.....	516,600	543,100	15.8	18.6	8,149,000	10,125,000
<i>Fall rye</i>	405,700	442,100	16.8	19.4	6,819,000	8,575,000
<i>Spring rye</i>	110,900	101,000	12.0	15.3	1,330,000	1,550,000
Flaxseed.....	2,150,700	2,817,200	8.2	8.9	17,719,000	25,114,000
Mixed grains.....	1,500,500	1,380,600	42.5	43.2	63,790,000	59,711,000
Corn for grain.....	488,900	514,000	63.5	57.1	31,023,000	29,337,000
Buckwheat.....	83,300	85,000	19.6	21.6	1,629,000	1,835,000
Peas, dry.....	63,900	54,000	15.4	18.4	984,000	993,000
Beans, dry.....	68,000	67,200	17.2	15.1	1,168,000	1,012,000
Soybeans.....	251,000	256,500	27.2	22.1	6,828,000	5,675,000
Potatoes.....	294,100	314,100	124.2	139.4	36,532,000	43,790,000
Mustard seed.....	80,140	156,050	613	479	49,144,000	74,715,000
Rapeseed.....	213,500	756,000	834	729	178,000,000	551,000,000
Sunflower seed.....	42,000	25,500	881	863	37,000,000	22,000,000
Tame hay.....	11,779,000	12,176,000	1.72	1.79	20,246,000	21,762,000
Fodder corn.....	369,000	370,200	10.74	9.05	3,964,000	3,352,000
Field roots.....	29,900	27,400	11.27	9.60	337,000	263,000
Sugar beets.....	90,453	85,906	13.70	12.72	1,239,518	1,093,100

¹Includes relatively small quantities of winter wheat in all provinces except Ontario.

Fruits and Vegetables

The most important fruit grown in Canada is the apple, of which more than 17,000,000 bu. were produced in 1958 with a total farm value of \$14,700,000. Commercial apple orchards are found in Nova Scotia, New Brunswick, southern Quebec, much of Ontario and the interior of British Columbia, particularly in the Okanagan Valley. Tender tree fruits—pears, peaches, cherries, plums—are also grown in Ontario with the most important concentrations being in the Niagara Peninsula and in Essex County. These same fruits as well as apricots are also grown extensively in the southern part of the Okanagan Valley in British Columbia.

The total value of fruit crops in Canada was estimated at \$43,300,000 in 1958. In the districts where these fruit crops are produced, sales make up an important part of the agricultural income.

In addition to the tree fruits, strawberries and raspberries are cultivated on a commercial scale in Prince Edward Island, Nova Scotia and New Brunswick, Quebec, Ontario and British Columbia. Raspberries are also grown



Strawberry jam and frozen asparagus are only two of the many processed forms of fruits and vegetables.

in commercial quantities in the mainland Maritime Provinces, Quebec, Ontario and British Columbia. British Columbia fruit growers also produce loganberries on a commercial scale in the lower mainland and on Vancouver Island. Grapes, too, are grown quite extensively in the Niagara district of Ontario and on a smaller scale in the interior of British Columbia.

The native blueberry is found wild over large areas in Canada and is harvested in commercial quantities in the Atlantic Provinces, Quebec and Ontario. A cultivated crop is grown in British Columbia.

Canada is an exporter of apples and blueberries. Canadian apples are ordinarily marketed in various countries, while blueberry exports go to the United States. For most of the other fruit crops, however, Canadian production is usually somewhat below domestic consumption with imports making up the deficit. However, a considerable proportion of the fruits imported are brought in during the season when domestic supplies are off the market.

No discussion of Canadian fruit growing would be complete without reference to the part played by the canning industry. Considerable proportions of the fruit crops are canned, frozen or otherwise processed each season although the importance of this outlet varies from year to year and with the different crops. In 1958, apples showed the smallest proportion going to processors with 27 p.c. of the crop being handled in this way; raspberries were at the other extreme with the volume processed amounting to 72 p.c. of the total domestic production. Processing plants are found in practically all of the fruit growing districts.

In 1958, 200,000 acres were planted to commercial vegetable crops, other than potatoes and turnips, in Canada¹. The harvest was valued at \$54,600,000, of which \$22,700,000 was made up by the principal processing crops: beans, corn, peas and tomatoes. Ontario is the biggest producer of vegetables with production valued at \$31,700,000 in 1958, followed by Quebec (\$13,600,000) and British Columbia (\$4,800,000).

Some market garden acreages are found close to the larger centres of population throughout Canada. In such areas a wide variety of crops is

¹ Excluding Newfoundland, Prince Edward Island and Saskatchewan for which statistics are not prepared.

produced to meet the needs of the local market. Land holdings are often small. There is also considerable production of vegetables in areas such as Essex County or the Holland Marsh in Ontario where soils and climatic conditions are particularly suitable to vegetable crops. Production in these areas is often on a large scale and the output is marketed over wide areas. Greenhouse-grown vegetables valued at \$3,200,000 were produced in 1958. Fall and spring tomatoes and spring cucumbers are the most important items.

The production of field grown vegetables in Canada is seasonal. During the winter when no domestic crops are being harvested, supplies of fresh vegetables are imported from the United States. At other times a very large proportion of the domestic requirements is met from Canadian output. Some exports from Canada to the United States are made, movement taking place particularly where there are large centres of population in the United States close to the Canadian border.

As in the case of fruits, the processing industry provides a very important market for the vegetable grower. Canneries, as well as freezing facilities and other processing plants, have been built in most of the important vegetable growing areas.

Farm Values of Fruits Produced, 1955-1958, with Averages 1950-54

Fruit	Average 1950-54	1955	1956	1957	1958
	\$'000	\$'000	\$'000	\$'000	\$'000
Apples.....	15,859	10,870	16,048	18,035	14,729
Pears.....	2,277	2,579	2,853	2,201	2,986
Plums and prunes.....	1,127	1,068	896	946	1,194
Peaches.....	4,532	6,125	4,384	6,218	5,404
Apricots.....	251	316	194	523	443
Cherries.....	2,504	3,503	2,076	3,606	3,736
Strawberries.....	6,351	5,910	4,240	3,675	5,012
Raspberries.....	3,066	2,775	2,407	3,008	2,392
Grapes.....	3,366	3,622	3,293	2,832	4,867
Loganberries.....	166	178	53	161	134
Blueberries.....	—	2,688	2,290	1,888	2,365
Totals.....	39,499	39,634	38,734	43,093	43,262

Livestock

The sale of meat animals and livestock products, excluding poultry and eggs, accounts for approximately one-half of the cash income of Canadian farmers. The combined efforts of research personnel, extension workers and quality-conscious farmers have resulted in steady improvement of the products marketed. Growth of population, increasing industrialization and relatively more favourable marketing conditions for livestock products than for the principal field crops have contributed to the situation where the income from livestock production exceeds that from field crops by a widening margin.

Cattle numbers have increased over one-third during the last decade. Practically all this increase from 8,363,000 in 1951 to 11,501,000 in 1960 has occurred in cattle raised for beef production. The number of cows kept on farms for milk production, slightly over 3,000,000, has changed very little in this decade and, in fact, is appreciably lower than during the period before World War II. Increasing milk production per cow has made it possible to



Reposing in a hand-hewn water trough 90 years old, Bridget has a cooling siesta. Hogs are an important source of farm income in Canada.

meet the rising domestic demand for dairy products as population increases, without expanding the number of cows. Beef cattle raising is still predominantly in the western provinces which have about 82 p.c. of the beef cows. Beef production, however, is being more evenly distributed due to a considerable movement of cattle from western Canada to Ontario feed-lots. Cattle production exceeds the domestic requirements for beef and veal. The

major export market for live cattle and beef is in the United States and supply-price relationships for these commodities are largely determined by that market.

Hog production has been characterized by wide fluctuations in two-to-three-year cycles. A rapid build-up of numbers on farms took place through 1958 and a burdensome surplus of pork production in 1959 resulted in price declines which, in turn, caused farmers to reduce production. The number of hogs on farms at June 1, 1960 was estimated at 5,483,000, 20 p.c. lower than in 1959. Reduced output was accompanied by marked price increases in 1960 which again stimulated greater production. Ontario and Alberta are the principal hog-producing provinces and although hogs have been widely raised in most farming areas throughout Canada there is increasing specialization, concentrating production into fewer but larger herds. Bacon-type rather than heavy lard-producing hogs are raised in Canada and improvement of carcass quality is stimulated by a premium, currently \$3, paid to the producer for each Grade A carcass marketed. The United States is at present Canada's principal export market for pork products.

Sheep production declined about 50 p.c. from the 1943-45 level to a low point in 1951. Very moderate annual increases from this low point have been sustained, but production is well below domestic needs. While the per capita consumption of mutton and lamb is low, considerable quantities are imported. Sheep are raised on much fewer farms in Canada than are cattle and hogs.

The stockyards in St. Boniface, Manitoba, are the largest in the Commonwealth. Nearly half of Manitoba's net agriculture income is derived from livestock products.



In eastern Canada medium and coarse wool sheep predominate and almost all sheep are raised in relatively small farm flocks. In the West a considerable portion of the sheep are raised under range-management conditions, and finer wool breeds predominate. Cross-breeding, however, is practised fairly extensively to produce better market lambs. Movement of ranch ewes to eastern farms for this purpose has been encouraged.

Estimated Meat Production and Consumption, 1958 and 1959

Item		1958		1959	
		BEEF		VEAL	
Animals slaughtered.....	No.	2,324,400	2,216,100	1,430,700	1,184,500
Animals exported.....	"	658,095	312,351	12,389	30,347
Meat production ¹	'000 lb.	1,163,595	1,130,142	150,796	130,532
Total domestic disappearance....	"	1,105,026	1,123,495	150,162	130,301
Per capita consumption.....	lb.	64.8	64.4	8.8	7.5
		PORK		MUTTON AND LAMB	
Animals slaughtered.....	No.	7,766,400	9,882,700	727,200	749,400
Animals exported.....	"	8,069	4,530	41,318	29,878
Meat production ¹	'000 lb.	1,012,739	1,265,971	31,779	32,824
Total domestic disappearance....	"	882,185	1,018,877	46,130	52,722
Per capita consumption.....	lb.	51.8	58.4	2.7	3.0
		OFFAL		CANNED MEAT	
Production.....	'000 lb.	94,339	101,493	75,909	175,738
Total domestic disappearance....	"	82,389	88,630	95,818	75,039
Per capita consumption.....	lb.	4.8	5.1	5.6	4.3

¹ Production from animals slaughtered in Canada, basis cold dressed weight excluding offal and, in the case of pork, fats and offal.

Dairying

Dairying is common to practically all farming areas in Canada but is highly specialized in the more densely populated sections. The central provinces, Ontario and Quebec, each have about one-third of the milk cows and a corresponding share of total production. The 1956 Census reported cows kept for milk purposes on 70 p.c. of the 575,000 farms in Canada but only 15 p.c. of farms had herds of 13 or more milk cows.

Climatic conditions make the cost of milk production high and are the cause of wide seasonal fluctuations. Except in areas where farmers supply milk for the fluid milk trade, most cows still freshen in the spring. This results in a high bulge of total milk production during the spring and early summer when pasture conditions are normally good. Production tapers off through the summer and fall months with mid-winter monthly output being about one-half that of June. Population growth and increasing urbanization are gradually modifying this production pattern.

Of 18,000,000,000 pounds of milk produced in 1959, 31 p.c. was sold as fluid milk, 58 p.c. was used in the manufacture of butter, cheese, powdered, evaporated and condensed milk, and 11 p.c. was consumed on farms. In 1940, in contrast, only 22 p.c. of the 15,000,000,000 pounds of milk produced went into the fluid milk market, 54 p.c. to manufacturing plants and 24 p.c. was consumed on farms.

Butter and cheddar cheese are the leading dairy products manufactured in Canada. They are produced in substantial surplus during spring and summer months and stored for consumption later when milk production is low. Cheddar cheese, skim milk powder, evaporated milk and condensed milk are the principal dairy products exported, while special varieties of cheese are imported.

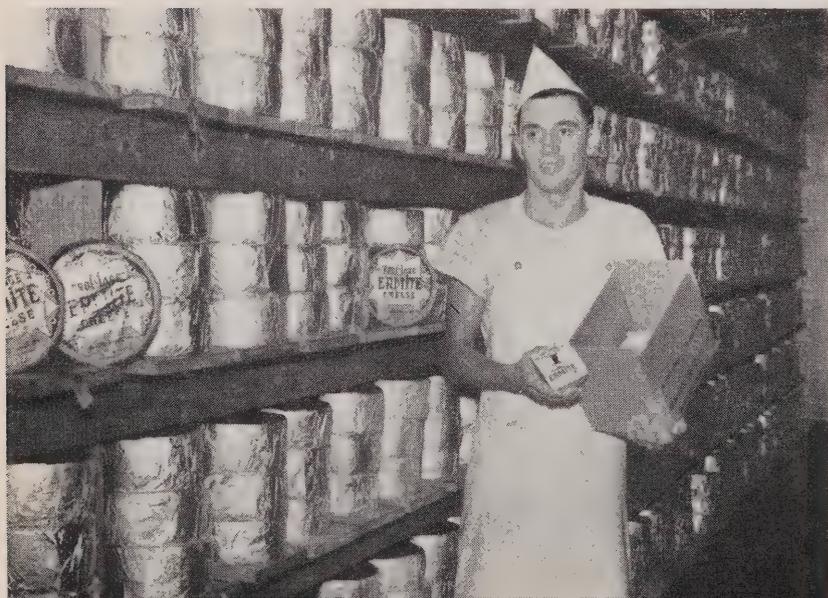
On the whole, total milk production and consumption are quite closely balanced. In recent years total domestic use of milk and milk products has amounted to about 97 p.c. of production.

Receipts from the sale of milk and cream amounted to \$515,000,000 in 1959 and accounted for 18 p.c. of the Canadian farmer's total cash income.

Dairy Production, by Economic Area, 1957, 1958 and 1959

Economic Area and Year	Total Milk Production	Milk Used in Fluid Sales	Products Manufactured ¹				
			Butter		Cheddar Cheese	Ice Cream	
			Creamery	Dairy			
	'000 lb.	'000 lb.	'000 lb.	'000 lb.	'000 lb.	'000 gal.	
Maritimes.....	1957	1,097,066	359,286	18,736	2,101	1,799	2,511
	1958	1,102,302	360,431	19,223	1,907	1,642	2,529
	1959	1,114,572	370,624	18,180	1,561	1,957	2,864
Que. and Ont.....	1957	11,599,437	3,648,631	199,558	2,330	93,409	21,994
	1958	12,085,407	3,708,264	222,994	2,049	86,514	22,654
	1959	12,219,626	3,797,528	214,237	1,936	102,367	25,444
Prairies.....	1957	3,833,485	941,811	82,195	7,653	3,137	6,735
	1958	4,060,531	966,871	90,493	7,478	2,374	7,147
	1959	4,017,878	995,354	88,616	6,619	2,146	7,433
B.C.....	1957	776,040	436,843	2,882	444	691	3,877
	1958	805,643	455,862	3,280	343	791	4,236
	1959	839,887	462,040	4,267	410	705	4,276
Totals.....	1957	17,306,028	5,386,571	303,371	12,528	99,036	35,117
	1958	18,053,883	5,491,428	335,990	11,777	91,321	36,566
	1959	18,191,963	5,625,546	325,300	10,526	107,175	40,017

¹ Not included in this table are: whey butter, with a production of 2,248,000 lb. in 1957, 2,137,000 lb. in 1958, and 2,722,000 lb. in 1959; other cheese with 10,083,000 lb., 10,406,000 lb., and 11,393,000 lb., respectively; and concentrated milk products with 540,058,000 lb., 586,317,000 lb., and 584,330,000 lb., respectively.



Canadians are proud of their cheese and in 1959 produced more than 118,500,000 pounds of it.

Poultry and Eggs

Poultry meat and egg production enterprises on Canadian farms have undergone significant change in scale of operations and efficiency of production since the end of World War II. Increasing specialization has been general to all areas but is most highly developed in parts of Nova Scotia and Quebec, southwestern Ontario and the lower mainland in British Columbia.

New and improved strains of chickens for both egg and meat production have resulted in year by year increases in the number of eggs per laying bird and in meat production per pound of feed. Production of eggs was 25 p.c. greater in 1959 than in 1945 although the number of laying hens was 3.3 p.c. lower. Spurred by the development and tremendous expansion of chicken broiler production, centred largely in Ontario and Quebec, the production of chicken meat has almost doubled since 1945. Increase of turkey meat production has been very substantial since 1953 and rose to 130,600,000 lb. (eviscerated weight) in 1959, compared with only about 46,600,000 lb. in 1953 and 28,400,000 in 1945.

Total farm value of poultry meat and egg production amounted to \$304,415,000 in 1959. By areas, value of production was distributed as follows: Ontario, 42.1 p.c.; Prairie Provinces, 24.9 p.c.; Quebec, 17.9 p.c.; British Columbia, 8.5 p.c. and Maritime Provinces, 6.6 p.c.

Summary of Supply, Distribution and Consumption of Poultry Meat and Eggs in Canada, 1958 and 1959

(Poultry meats on eviscerated weight basis)

Item	1958					
	Total Meat	Fowl and Chicken	Turkey	Goose	Duck	Eggs
	'000 lb.					'000 doz.
Stocks at Jan. 1.....	32,700	20,130	12,137	246	187	13,200
Production ¹	470,377	356,007	107,839	3,060	3,471	449,819
Imports.....	11,727	9,524	562	—	1,641	2,434
Total Supply.....	514,804	385,661	120,538	3,306	5,299	465,453
Exports.....	328	324	4	—	—	19,386
Stocks at Dec. 31.....	44,223	25,736	18,043	224	220	7,890
Domestic disappearance.....	470,253	359,601	102,491	3,082	5,079	438,177
Less used for hatching.....						15,976
Domestic consumption.....	470,253	359,601	102,491	3,082	5,079	422,201
Per capita consumption.....	27.6 lb.	21.1 lb.	6.0 lb.	0.2 lb.	0.3 lb.	24.8 doz.
	1959					
	'000 lb.					'000 doz.
Stocks at Jan. 1.....	44,223	25,736	18,043	224	220	7,890
Production ¹	502,763	365,198	130,614	3,170	3,781	460,004
Imports.....	8,233	6,262	438	—	1,533	2,449
Total Supply.....	555,219	397,196	149,095	3,394	5,534	470,343
Exports.....	717	648	69	—	—	29,932
Stocks at Dec. 31.....	24,870	12,783	11,804	129	154	6,030
Domestic disappearance.....	529,632	383,765	137,222	3,265	5,380	434,381
Less used for hatching.....						15,456
Domestic consumption.....	529,632	383,765	137,222	3,265	5,380	418,925
Per capita consumption.....	30.4 lb.	22.0 lb.	7.9 lb.	0.2 lb.	0.3 lb.	24.0 doz.

¹ Production estimates do not include Newfoundland.



The Experimental Farm at Nappan, N.S.

Government and Agriculture

The Federal Government and the provincial governments each maintain a Department or Director of Agriculture which has the general function of giving the utmost aid and guidance to the farmer in almost every field of his operations. The activities of the federal Department include research, promotional and regulatory services, and assistance programs. Much of this work is carried out in co-operation with provincial authorities.

The Department seeks the solution of practical farm problems through the application of fundamental scientific research to all aspects of soil management and crop and animal production. Its broad program of investigation is conducted through 10 research institutes, seven of them at Ottawa, nine regional research stations, six research laboratories, 26 experimental farms, two forest nursery stations, one experimental fur ranch, and 20 substations, located throughout the 10 provinces and the Yukon and Northwest Territories.

Research conducted by the institutes embraces breeding, nutrition and management of animals; plant studies including disease control and breeding of superior varieties; fruit and vegetable processing and storage; soil chemistry and classification; entomology; bacteria of agricultural significance; processing of dairy products; control of destructive insects and noxious weeds; control of insect diseases through biological means; and examination of chemical pesticides. Other units deal with regional problems such as cereal diseases, exploitation of peat bogs, reclamation of marshland, shelter-belt trees, soil erosion, dryland agriculture and the growing of special crops such as tobacco.

Other Departmental services are directed toward the prevention or eradication of livestock diseases, the inspection and grading of agricultural products and the promotion of sound policies for crop and livestock improvement. Safeguarding crops and livestock from diseases or pests that might be imported with shipments from abroad is an important part of this service. Programs for the eradication of bovine tuberculosis and brucellosis, and analytical and diagnostic services are provided for domestic and wildlife diseases. The promotion of high quality seed and purebred livestock is

also of great importance. Another type of activity is the enforcement of laws governing the sale of feeds, fertilizers, pesticides and many other products purchased by farmers.

Canada has enacted a number of financial measures to ensure greater stability of the farm economy.

To make ample, long-term credit available to competent Canadian farmers who own, or wish to acquire, economic farm units, the Government passed the Farm Credit Act on July 18, 1959. Replacing the Canadian Farm Loan Act, 1927, it provides for greater loans on a broader basis, including a new type of assistance, the supervised loan, designed to enable qualified farmers between the ages of 21 and 45 to set up economic farm units. From 1929 until March 31, 1960, a total of 59,793 loans valued at \$204,746,000 were made under the old and new Acts.

The Farm Improvement Loans Act, 1944, which provides funds for equipping, improving and developing farms, made 794,818 loans totalling \$911,926,616 from 1945 to the end of 1959.

Another important piece of legislation passed in 1959 was the Crop Insurance Act, which authorizes the Minister of Agriculture to sign separate agreements with provinces wishing to undertake crop insurance and willing to set up and administer the scheme most suitable to their needs. Manitoba has already taken advantage of this crop insurance scheme.

A number of federal Acts assist the marketing of produce. The Agricultural Stabilization Act provides price support for any designated natural or processed product at the discretion of the Agricultural Stabilization Board, but is mandatory for nine commodities, cattle, hogs, sheep, cheese, butter, eggs, and wheat, oats and barley outside the jurisdiction of the Canadian Wheat Board.

The Agricultural Products Marketing Act provides for the extension of all or any powers exercised by provincial boards, established under provincial legislation for the marketing of agricultural products within the province, to permit them to exercise those powers outside the province in interprovincial and export trade.

Where natural hazards cause severe crop loss, farmers may obtain compensation through the Prairie Farm Assistance Act, and prairie farmers who cannot deliver all their grain to market are given temporary financial assistance under the Prairie Grain Producers Interim Financing Act. The Prairie Grain Advance Payments Act permits the Canadian Wheat Board to make interest-free advances to farmers against threshed grain stored elsewhere than in an elevator.

Regulatory Acts which the federal Department of Agriculture administers include Agricultural Products Board Act; Agricultural Products Co-operative Marketing Act; Agricultural Products Marketing Act; Agricultural Stabilization Act; Animal Contagious Diseases Act; Canada Agricultural Products Standards Act; Canada Dairy Products Act; Cheese and Cheese Factory Improvement Act; Cold Storage Act; Crop Insurance Act; Department of Agriculture Act; Destructive Insect and Pest Act; Experimental Farm Stations Act; Feeding Stuffs Act; Fertilizers Act; Fruit, Vegetables and Honey Act; Hay and Straw Inspection Act; Humane Slaughter of Food Animals



A form of prairie farm rehabilitation: a farm dugout which has been adapted for irrigation with the use of a portable sprinkler system, and which is also used to supply the farm with all domestic requirements.

Act; Inspection and Sale Act; Live Stock and Live Stock Products Act; Live Stock Pedigree Act; Maple Products Industry Act; Maritime Marshland Rehabilitation Act; Meat and Canned Foods Act; Meat Inspection Act; Milk Tests Act; Pest Control Products Act; Prairie Farm Assistance Act; Prairie Farm Rehabilitation Act; Seeds Act; Wheat Co-operative Marketing Act; Criminal Code, Sect. 178, Race Track Betting.

Irrigation and Land Conservation

Under the Prairie Farm Rehabilitation Act of 1935, the Federal Government, jointly with the respective provinces, undertook a long-term water conservation and land utilization program. Five major irrigation projects, which will assure adequate supplies of water for more than 1,500,000 acres of land, have been or are being constructed in southern Alberta and Saskatchewan.

A PFRA water development program has resulted in construction of 63,000 projects, varying in size from individual farm dugouts to community dams. Several major reclamation projects have been undertaken in Manitoba, Saskatchewan and British Columbia, where flood problems exist. In addition, 63 community pastures have been developed under PFRA in Saskatchewan and Manitoba on 1,825,000 acres considered unsuitable for grain production.

Federal aid to New Brunswick and Nova Scotia, under the Maritime Marshland Rehabilitation Act, has provided permanent protection from flooding for 90,000 acres of low-lying lands, which have been adapted for the growing of crops. Construction of dykes and the damming of tidal rivers were involved.

The Annapolis Dam tide control and traffic crossing project constructed by the Maritime Marshland Rehabilitation Commission in Nova Scotia. This causeway over the Annapolis River, where 17-ft. tides run in and out to the Bay of Fundy, was built more economically than a bridge and the surrounding area now has the advantage of flood control.





A fisherman's best friend is a fish.

The Seas and Lakes – Fisheries

Canadian sea fishermen, tending their lines, nets and traps amid Atlantic fogs and storms or handling their boats knowingly in the tricky currents that flow between our Pacific islands, bring in an annual catch of close to 2,000,000,000 pounds. This fish has a landed value of about \$100,000,000 and a marketed value well in excess of \$200,000,000. In terms of volume about two-thirds of the catch comes from the Atlantic and one-third from the Pacific. In terms of value the income is more equally divided between the two coasts.

Canada's Arctic waters do not support fish stocks in commercial quantities but, in addition to the Atlantic and Pacific activities, there are freshwater fisheries whose value, after sagging when lampreys decimated stocks of trout and whitefish in some of the most productive waters of the Great Lakes, has recovered considerably in the past few years as the "north country" has opened up and more and more hitherto remote lakes have come into production.

Total commercial landings include a wide variety of species but the major fish processing industries are based on only a few. In 1959 salmon, herring and halibut yielded 93 p.c. of the value of all Pacific landings; cod and other groundfish, together with lobsters, supplied nearly 90 p.c. of catch value in Newfoundland, and 76 p.c. in the four other provinces on the Atlantic; while pickerel, whitefish and lake trout accounted for over 60 p.c. of the value of the freshwater industry.

Fish processing in Canada is based on export markets, which absorb 70 p.c. of the entire output. Total value of exported fishery products in 1959 was \$148,000,000. Canned salmon, fresh and frozen salmon and halibut,



The daughter of a member of the George River Eskimo Fishermen's Co-operative unloads Arctic char from a net. In 1960, 60,000 pounds of this table delicacy were sold in southern Canada and the United States.

and herring meal and oil from the Pacific Coast made up 28 p.c. of this total. Frozen and cured Atlantic groundfish, together with Atlantic lobsters, live, frozen or canned, constituted 45 p.c. Pickerel, whitefish and trout from the freshwater lakes were shipped whole, dressed or filleted to add 8 p.c. The remaining 19 p.c. of exports was extremely various.

The United Kingdom is the main export market for the canned salmon and the herring oil. The United States takes most of the shipments of fresh and frozen salmon, halibut, groundfish and freshwater fish; also the groundfish fillets and blocks, the lobsters and the herring meal. The West Indies provide the main demand for the cured fish, although considerable other quantities are shipped to Italy, Spain, Brazil and parts of the United States.

Like most industries based on primary products, fisheries are unpredictable. Ice usually leaves Canada's more northern Atlantic harbours during April, but they may be blocked through May, some of them even into June. Groundfish may be scarce or plentiful on the Atlantic banks. Even when they are abundant, cod may fail to move inshore to the waiting traps and Newfoundland's valuable but vulnerable salting industry must then go short of supplies. Salmon runs appear on the Pacific coast in two and four year cycles, depending on species. Moreover, fish is an extremely perishable product. In fresh or frozen form it must be marketed soon after processing. Only a small oversupply in cold storage is needed to create a buyers' market and start prices tumbling. Demand for many products is seasonal, with peak sales related to Lent, the Jewish New Year, Christmas (oysters) and the summer holiday season (lobsters and shore dinners). And in Canada, with the entire structure based on exports, there are often elements in the market situation which are beyond the industry's control: importing countries may impose quotas or buy elsewhere; competing producers may undercut world prices. Fishermen and processors thus learn to expect an occasional poor season among the good ones and to take both in their stride.

A casual glance at Canada's economy might indicate that its fisheries are not very important. About 37 p.c. of the national output of primary products comes from agriculture and most of the rest from mining, forestry and the development of electric power. Fishing produces only about two p.c. in terms of dollar value. But it supplies the income of 80,000 fishermen and 16,000 plant workers and in many coastal areas is the major support of the local economy.

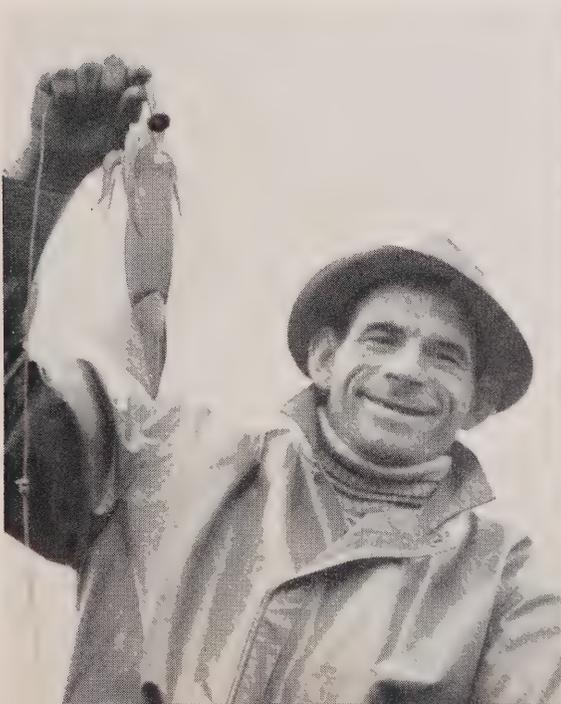
The development of the fisheries of Canada demands a management program founded on sound scientific research, with constant emphasis on conservation, new and improved fishing and processing methods, and greater diversification of the fishing enterprise as a whole. These are the responsibility of the federal Department of Fisheries. Rigid conservation methods are required to provide the necessary protection for fish populations. The expansion of proven development techniques in certain areas has improved the future prospects where for various reasons runs of fish have been reduced.

The Fisheries Research Board of Canada is the Department's scientific arm and has charge of most of the Federal Government's research on fishes and other aquatic animals, their behaviour, the biology of their stocks, equipment needed for capturing them, methods and equipment for processing them, methods for their preservation and control of quality, and development of by-products from waste material obtained in processing.

Because of the trend in recent years toward greater efficiency and mobility in fishing fleets, the Department faces an increased responsibility for maintaining and, where possible, expanding the supply of fish in Canadian waters. It limits fishing seasons and methods of capture and its 80 vessels patrol the fishing grounds to ensure that closed areas are not commercially fished, that craft are properly licensed, and that they are not using nets of more than the regulation length or size of mesh.

The federal Department also furnishes an inspection service to ensure that no low-grade product reaches the United States and other foreign markets to destroy the reputation for high quality attained by the majority of Canadian processors. The same service protects the Canadian consumer with systematic inspection of all canned fish entering Canada from other countries.

Commencing in April 1959, a further inspection service was made available to such processing plants as might wish to take advantage of it. Standards for top grade fresh and frozen fish products were issued by the Canadian Government Specifications Board and inspectors were trained to grade plants



Famed in folk-song, the "squid-jiggin' grounds" of Newfoundland are the scene, every spring, of boat-loads of fishermen, armed with wooden jiggers with multiple hooks, going out to catch bait.

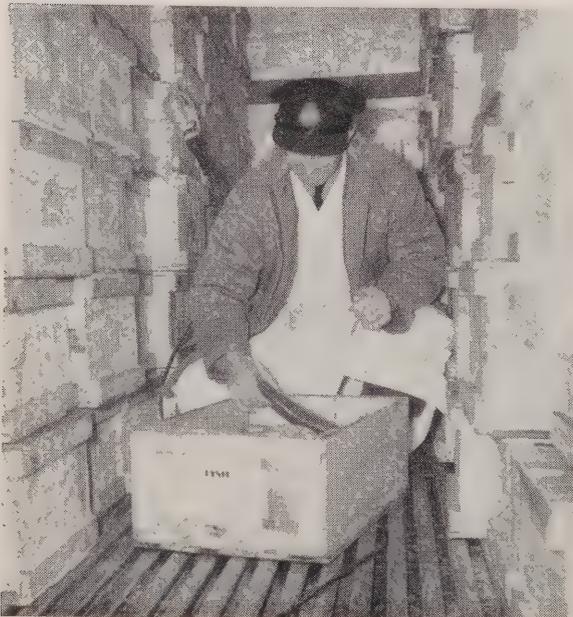
and their products on this basis. Fish which passed this test was then stamped with a maple leaf emblem to indicate top quality. An increasing number of firms are availing themselves of this opportunity to advertise the excellence of their product.

Considerable progress has been made in establishing working arrangements between the Department of Fisheries on the one hand and the fishing industry, ancillary companies and other fisheries administrations on the other, in an overall modernization program embracing every phase of the fishing enterprise.

One of the Department's responsibilities is the administration of the Federal Government's Fishermen's Indemnity Plan, under which low cost protection against loss or damage to fishing boats valued at \$10,000 or less, and to lobster traps, is provided to fishermen.

The need for co-operation between nations is of great consequence in the conservation of the world's natural resources, and during recent years the fishery stocks of oceans, lakes and rivers have been under increasing investigation. Canada, among the first to recognize this need, has been active in the negotiation of international agreements and establishment of international commissions which study and recommend correct management procedures in waters of common concern to two or more countries. The commissions operate within the framework of conventions or treaties; of those to which Canada is signatory, three are bilateral agreements with the United States dealing with Pacific sockeye and pink salmon of the Fraser River system, Pacific halibut, and the fisheries of the Great Lakes, and four include other countries with interest in the Atlantic and Pacific Oceans, the Arctic and the Antarctic.

Fisheries Statistics. The 1959 Atlantic Coast fisheries, off to a slow start due to a late spring, came up with a record-breaking year when the value of landings paid to fishermen reached an all-time high of \$58,400,000. Heavy catches of groundfish, higher unit prices for most major species, bonus prices paid by freezing plants for top quality fish, and a strong demand for saltfish for export aided in making 1959 a banner year.



Inspection is required by law before any of the following products can pass through Canadian export points: all salted, smoked or pickled fish; all fresh or frozen whitefish; all British Columbia canned salmon and canned herring; all Newfoundland canned lobster and salmon.

In comparison, the Pacific Coast fishermen had a very poor year in 1959. A general strike which kept fishermen, tendermen and plant workers off the job at the height of the summer season; a much lower year in the salmon cycle than was anticipated; the prolonged strike of the herring fishery; foreign competition in the fish meal market; and lower prices for halibut, herring and bottom fish all added up to a drop of \$17,000,000 in fishermen's income compared to 1958.

The inland fisheries for 1959, although delayed by a late spring breakup, held their own except in Ontario. There was a good demand and firm prices held for most species.

Quantity and Value of Landings of the Chief Commercial Fish, 1957-59

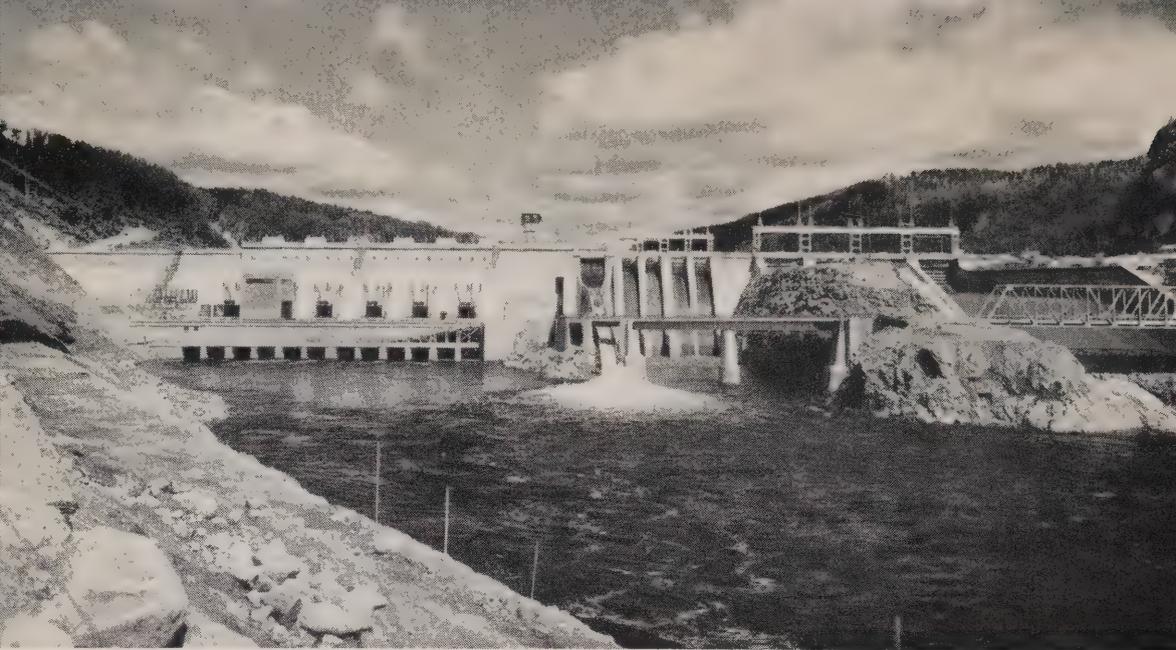
Kind of Fish	1957		1958		1959 ¹	
	Quantity	Value	Quantity	Value	Quantity	Value
	'000 lb.	\$'000	'000 lb.	\$'000	'000 lb.	\$'000
Atlantic Coast	1,378,446	50,755	1,251,039	51,153	1,360,625	58,436
Cod.....	641,834	15,057	530,932	13,228	639,138	17,023
Haddock.....	131,638	4,210	103,366	4,092	111,997	4,970
Halibut.....	7,558	1,751	6,730	1,761	6,424	1,687
Herring and "Sardines".....	222,314	2,515	233,044	2,826	238,916	3,279
Lobsters.....	44,438	14,501	42,950	15,376	45,714	17,387
Mackerel.....	19,690	724	16,147	737	9,451	579
Redfish.....	46,361	1,032	61,371	1,488	40,618	977
Salmon.....	3,033	1,071	3,453	1,226	3,956	1,453
Swordfish.....	5,180	1,341	5,376	1,439	6,703	1,383
Other.....	256,400	8,553	247,670	8,980	257,708	9,698
Pacific Coast	490,187	30,021	650,589	51,352	613,597	34,995
Halibut.....	22,542	3,673	23,708	4,902	23,799	4,398
Herring.....	295,376	4,892	405,123	6,712	444,032	7,355
Salmon.....	131,897	18,885	181,318	37,129	105,680	20,503
Other.....	40,372	2,571	40,440	2,609	40,086	2,739
Inland	119,589	13,471	114,613	14,024	117,212	12,103
Pickeral (blue).....	6,398	1,151	834	216	50	15
Pickeral (yellow).....	19,215	3,603	15,475	3,387	12,997	2,994
Whitefish.....	24,444	3,611	24,023	3,496	24,695	3,548
Other.....	69,532	5,106	74,281	6,925	79,470	5,546
Totals	1,988,222	94,247	2,016,241	116,529	2,091,434	105,534

¹ Preliminary.

Landings and Values of All Fishery Products, by Province, 1957-59

Province or Territory	Quantities Landed			Value of Products		
	1957	1958	1959 ¹	1957	1958	1959 ¹
	'000 lb.	'000 lb.	'000 lb.	\$'000	\$'000	\$'000
Newfoundland.....	575,825	464,024	562,228	26,750	25,746	31,675
Prince Edward Island.	39,635	39,078	42,025	4,410	5,449	5,961
Nova Scotia.....	438,687	468,478	423,273	45,779	50,812	50,367
New Brunswick.....	192,299	160,972	226,360	22,293	24,623	28,367
Quebec.....	140,845	124,020	112,954	7,929	7,827	7,856
Ontario.....	51,109	47,175	48,984	7,928	8,180	5,475
Manitoba.....	31,571	31,929	31,052	5,929	6,844	6,689
Saskatchewan.....	11,065	12,600	12,550	2,010	2,339	2,596
Alberta.....	10,415	11,482	12,664	1,451	1,450	1,684
British Columbia.....	490,187	650,589	613,597	63,650	97,016	67,062
Northwest Territories.	6,584	5,894	5,747	1,298	1,235	1,146
Totals	1,988,222	2,016,241	2,091,434	189,427	231,521	208,879

¹ Preliminary.



The Beaumont Development—Shawinigan Water and Power Company's seventh hydro-electric plant on the St. Maurice River—is its first generating station of the semi-outdoor type. The traditional powerhouse has been replaced by seven individual concrete enclosures, in six of which are the generating units and in the seventh a repair bay. Beaumont has a capacity of 330,000 hp., and all seven plants a capacity of 2,025,000 hp. The Beaumont Development necessitated construction of access roads; erection of the construction plant and housing; excavation of 11,000,000 tons of earth and rock; erection of a 90-mile transmission line; relocation of a 10-mile stretch of railway; building of two railway bridges; and construction of a 700-ft. railway tunnel.

Electric Power

CANADA is extremely well provided with energy potential in many forms—wood products, coal, petroleum, natural gas and falling water, and the more recently recognized minerals which contain a tremendous potential because of their atomic structure. Increasing amounts of energy are being utilized for the production of electric power, in which Canada ranks fourth among the nations of the world. On a per capita basis, Canadians are the second largest consumers of electricity in the world.

The many fast-flowing rivers of Canada with their natural or man-made reservoirs are the principal source of power and no doubt will retain this leadership for some years to come; being renewable, this source of power is also the most permanent of the country's natural energy resources. In 1960 hydro-electric facilities generated over 90 p.c. of the total electric energy produced in Canada. The total installed capacity represented about 30 p.c. of the estimated feasible turbine installation of the country.

In some areas, there is a growing tendency towards increased thermal-electric generation which reflects not only a stage of hydro-electric development wherein available undeveloped sites are becoming more remote from established demand areas, but also the benefits of resource conservation which may be derived through the operation of an integrated power system, supplied by both hydro-electric and thermal-electric plants. In the Atlantic provinces and in Ontario, the fuel supply of thermal-electric plants is mainly coal, while in Western Canada, coal, oil and natural gas are used. Important progress

also is being made in the development of power from nuclear sources, although it is uncertain just how soon energy will compete economically with the more conventional methods of power production.

Available and Developed Water Power in Canada, January 1, 1961

Province or Territory	Available Continuous Power at 80 p.c. Efficiency		Installed Turbine Capacity hp.
	At Ordinary Minimum Flow	At Ordinary Six-Months Flow	
	hp.	hp.	
Newfoundland.....	1,608,000	3,264,000	385,925
Prince Edward Island.....	500	3,000	1,660
Nova Scotia.....	30,500	177,000	184,538
New Brunswick.....	123,000	334,000	254,258
Quebec.....	10,896,000	20,445,000	12,435,245
Ontario.....	5,496,000	7,701,000	7,814,562
Manitoba.....	3,492,000	5,798,000	988,900
Saskatchewan.....	550,000	1,120,000	132,135
Alberta.....	911,000	2,453,000	414,455
British Columbia.....	18,200,000*	19,400,000*	3,700,326
Yukon Territory.....	4,678,000*	4,700,000*	38,190
Northwest Territories.....	374,000	808,000	22,250
Canada.....	46,359,000	66,203,000	26,372,444

*The figures marked with an asterisk reflect the effect of possible stream flow regulation based on known storage potentials.

To meet the continued demand for electric power to operate mines, mills and factories, to power farm machinery and home appliances, and to light homes, offices and streets, new hydro-electric capacity amounting to more than 1,700,000 hp. and new thermal capacity of more than 700,000 kw. was added during the year in Canada. By far the largest hydro increase was made in Quebec where 1,176,500 hp. was added. Ontario, with 400,000 kw. of new thermal capacity, surpassed the other provinces in thermal development.



A 36,000 kw. gas turbine plant at Les Boules, Que. will act as a standby plant for the Gaspé Peninsula which is now served by 28 miles of underwater cable, laid in 1954. The present system has been difficult to maintain, due to severe weather and ice conditions. The new plant will also provide extra capacity to meet the winter peak and will act as a synchronous condenser for most of the time. This is Hydro Quebec's first thermal plant.

Atlantic Provinces

Of the Atlantic Provinces, Newfoundland alone derives its main source of electric energy from water power. Nova Scotia and Prince Edward Island depend primarily for their electrical supply upon thermal-electric capacity while electric capacities in New Brunswick are about equally proportioned between water power and thermal power capacities.

In Newfoundland, which includes Labrador, installed water power capacities totalling 385,925 hp. make up almost 80 p.c. of the province's installed power capacity. In Labrador, a 12,000-hp. unit was installed in 1960 in the Menihek Rapids development on the Ashuanipi River, raising the capacity at the site to 24,000 hp. in three units. A significant increase in capacity in Labrador will result in mid-1962 on completion of the initial stage of a development at Twin Falls on the Unknown River. The development initially will consist of 120,000 hp. in two units and ultimately of 300,000 hp. in five units and is one of three subsidiary projects which can be utilized prior to development of a major project on the main channel of the Hamilton River. On the island portion of the province, a 156,000-hp. development, located on the Humber River, is presently the largest single installation in the province. Thermal-electric capacity in the province was raised to about 68,000 kw. on completion in 1960 of 5,490 kw. of new capacity.

In Prince Edward Island, two thermal stations, one at Charlottetown and the other at Summerside, supply the major portion of the province's electrical demand. In 1960, thermal generating capacity at Charlottetown was increased to 32,500 kw. following installation of a 10,000-kw. steam unit.

In Nova Scotia, the greater part of the electric power consumed in the province is generated by thermal-electric plants, mainly those at Halifax, Trenton, Glace Bay and Sydney. In 1960, a 20,000-kw. unit was added at the Trenton steam plant, raising the capacity at this plant to 60,000 kw. and increasing the thermal-electric generating capacity in the province to more than 370,000 kw. While there has been considerable thermal-electric development in the province, water power also has been developed to a large extent. At the end of 1960, hydro-electric capacity in operation totalled 184,538 hp. On the Sissiboo River, two hydro-electric stations totalling 20,000 hp. will be completed in 1961 and a 10,800-hp. development is proposed for construction at an early date. A 7,500-hp. development on the Allain (Lequille) River is expected to be completed in 1963.

In New Brunswick, some 190,000 kw. of hydro-electric generating capacity and a similar amount of thermal-electric capacity were in operation at the end of 1960. The largest hydro-electric installations in the province are the Beechwood and Grand Falls developments on the St. John River which together provide 135,000 kw. of generating capacity. A steam plant is under construction at East Saint John where initially one unit of 50,000 kw. is expected to be in operation by mid-1961, with an ultimate installation of 250,000 kw.

Quebec

Quebec is the richest of the provinces in available water power resources and ranks highest in developed water power. With the installation in 1960 of 1,176,500 hp. of new hydro-electric capacity, the total installed water power

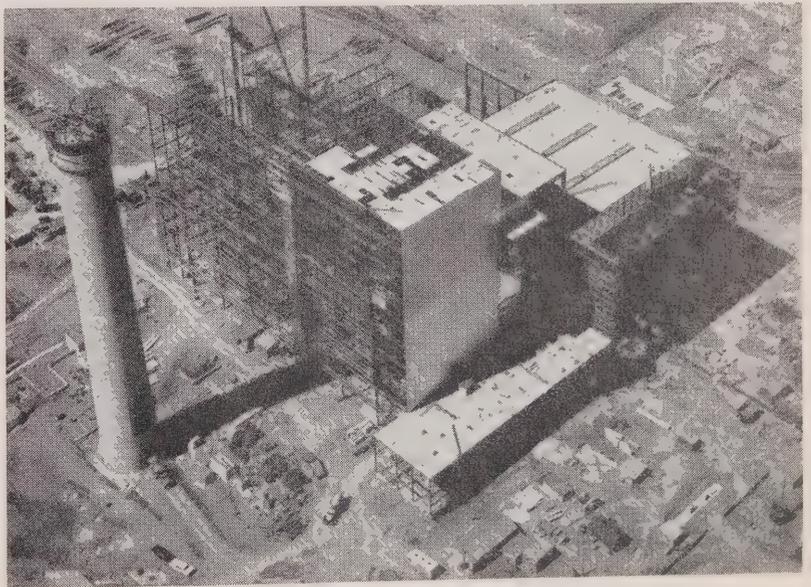
capacity in the province was raised to 12,435,245 hp., representing about 47 p.c. of the total for Canada. Vast power resources are available on the southward flowing tributaries of the St. Lawrence River and Gulf where the major part of the province's water power installations are located and where additional capacity under construction totals 2,490,400 hp.

Most of the developed sites in Quebec are owned by private corporations but the provincial government, through its Quebec Hydro-Electric Commission, is the major producer in the hydro-electric field. Capacities totalling 4,511,700 hp. have been installed by the Commission at seven developments; the largest of these developments and also the largest single hydro-electric station in Canada, is the Beauharnois development on the St. Lawrence River where 2,087,300 hp. are now installed and where ultimate development will realize 2,234,700 hp. Other large installations owned by the Commission are the 1,200,000-hp. Bersimis I development which was completed in 1958 and the 855,000-hp. Bersimis II development, which was completed in 1960. The Commission continued construction for the development of 840,000 hp. on the Ottawa River at Carillon and began construction of a 1,500,000-hp. development on the Manicouagan River as the initial phase of a proposed project which will ultimately afford the development of five major sites and extension of two existing sites on the two rivers.

The Aluminum Company of Canada Limited operates five hydro-electric developments on the Saguenay and Peribonca Rivers and ranks second in the amount of installed hydro-electric capacity in Quebec. In 1960 the remaining two units were installed in the 1,000,000-hp. Chute des Passes development on the Peribonca River raising the Company's total installed capacity in the province to 3,000,000 hp. The Shawinigan Water and Power Company has seven developments totalling 1,754,000 hp. on the St. Maurice River and two smaller developments totalling 26,200 hp. on the Batiscan and Ste. Anne de la Pérade Rivers.

Development of water power resources in the province continues to meet the major need for power; however, a 36,000-kw. gas turbine plant was installed in 1960 near the village of Les Boules. At the end of 1960, the total generating capacity of thermal-electric stations in Quebec was only about 100,000 kw.

With the completion of the St. Lawrence power project, Ontario Hydro is concentrating its major construction effort on thermal generation. At Lakeview, Ont., six 300,000 kw. units will be installed to make it the world's largest thermal plant by 1965. One unit will be commissioned in each of the years 1961, 1962, 1963 and 1964, with completion in 1965 of an installation of 1,800,000 hp.



Installation of major equipment at the Nuclear Power Demonstration Station near Rolphton, Ontario, is going ahead. Canada's first nuclear power plant, known as NPD, is scheduled for operation during 1961. It will generate 20,000 kw. and is intended to be used as a demonstration plant to provide a training centre for operators who will be required in the large nuclear power plants planned for the near future.



Ontario

Ontario ranks third among the provinces in total available water power resources and second in the amount of installed hydro-electric capacity. However, water power resources in the province are being used up rapidly and future power needs will have to be supplied in large part by thermal-electric plants, either the conventional coal-fired plants or the newer uranium-fuelled plants which utilize the energy released by nuclear reaction.

In 1960, only 26,500 hp. of new hydro-electric capacity was brought into service in the province; however, the addition of 400,000 kw. of thermal capacity upheld the rapid growth in electrical capacity which began some years ago in the province.

The Hydro-Electric Power Commission of Ontario, Canada's largest power-producing and distributing agency, owns and operates 70 hydro-electric developments with a total turbine capacity of about 7,000,000 hp. and two thermal-electric plants with a total generating capacity of more than 1,100,000 kw. The Commission's transmission network is interconnected with other systems in Quebec, New York and Michigan States and in southern Manitoba.

Major water power developments totalling some 4,400,000 hp. in nine plants are concentrated in the reach spanning the St. Lawrence and Niagara Rivers and the Welland Canal. The largest of these developments are the 1,200,000-hp. Robert H. Saunders-St. Lawrence Generating Station and the 2,521,000-hp. Sir Adam Beck-Niagara development. In northern Ontario three new developments are either under construction or proposed for early construction. These new developments will be known as Little Long Generating Station, Harmon Generating Station and Kipling Generating Station and will be located on a 12-mile reach of the Mattagami River. The initial combined turbine capacity of the three developments will amount to 546,000 hp. with ultimate installation expected to reach 1,155,000 hp. Of importance to the development of these far northern rivers are new techniques in high voltage transmission which the Commission is developing and which make the harnessing of these distant sites economic at this time. A 460,000-volt transmission line—the first major project of its type in North America—will transmit the northern power to northwestern Ontario and to major load centres in southern Ontario.

The dwindling opportunity for water resource development in Ontario has brought about the need for thermal-electric expansion in areas adjacent to present load centres. Two 200,000-kw. steam generating units were added during 1960 in the Commission's Richard L. Hearn Generating Station near Toronto. On completion of a final 200,000-kw. unit in 1961, the ultimate generating capacity of nearly 1,200,000 kw. in eight units will have been realized. Construction was continued by the Commission at two other thermal-electric plants, the Lakeview plant near Toronto and the Thunder Bay plant at Fort William. The Thunder Bay plant is expected to commence initial operation in 1961 following installation of a 100,000-kw. unit; however, the site will permit the installation of additional units to an ultimate capacity of 1,000,000 kw. In the field of nuclear-electric energy, the Commission, in conjunction with Atomic Energy of Canada Limited, is constructing a 20,000-kw. Nuclear Power Demonstration plant at Rolphton, Ontario for operation in 1961 and a 200,000-kw. uranium-fuelled, heavy-water moderated plant at Douglas Point which is expected to be in service in 1964 or early in 1965.

Prairie Provinces

Of the three Prairie Provinces, Manitoba is the most abundantly endowed with water power resources. In contrast, Alberta and Saskatchewan have relied to a great extent upon thermal-electric power. Of significance, however, is the construction of four large hydro-electric developments in the Saskatchewan River basin, two of which are located in Saskatchewan and one each in Manitoba and Alberta.

Most of the hydro-electric capacity in Manitoba is located on the Winnipeg River where the installation of six generating stations with a combined turbine capacity of 763,000 hp. has brought about the development of all available power sites on the river. New hydro-electric capacity was installed during 1960 at the Kelsey generating station and construction of a three-unit 450,000-hp. development at Grand Rapids on the Saskatchewan River was begun. The three units will be completed by 1964 and will supply power for the Board's network in southern Manitoba. New load requirements in the southern system presently are being met by the installation of thermal-electric plants. Also, a new thermal plant at Selkirk commenced operating in

The Kelsey Power Plant under construction on the Nelson River at Grand Falls in northern Manitoba is a 210,000 hp. development which will serve the mining development of the International Nickel Company at Moak, Mystery and Thompson Lakes.





The most spectacular expansion of thermal facilities planned outside Ontario is in Alberta. The present net thermal generating capacity of about 600,000 kw. will be more than trebled by 1970. Recently extended is the thermal-electric plant at Edmonton, flanked by the city's water treatment plant on the left.

1960 following installation of a 66,000-kw. unit, with installation of a second 66,000-kw. unit expected in 1961.

In Saskatchewan, the electric power requirements of the southern part of the province have been supplied by thermal-electric generating stations, foremost of which are the Queen Elizabeth and Boundary Dam stations which contain generating capacities of 132,000 kw. each. At the end of 1960, more than 650,000 kw. of thermal-electric generating capacity was available for service in the province. The construction of hydro-electric developments previously was confined to the mining areas of the province where two developments with total turbine capacities of 125,500 hp. and 6,600 hp. have been installed. However, greater emphasis was placed on water power development in 1958 when an agreement between the Federal Government and the Saskatchewan Government brought about the start of construction on a large earth-fill dam on the South Saskatchewan River. Although water impounded by the dam will be primarily for irrigation purposes, hydro-electric facilities totalling about 180,000 hp. will be incorporated by Saskatchewan at the dam. The benefits from regulation on the South Saskatchewan River make the development of downstream sites economic at this time and a start has been made on the construction of a hydro-electric development in the Tobin Rapids-Squaw Rapids reach of the main Saskatchewan River where six units producing 276,000 hp. are expected to be in operation by 1964. The new water power developments will supply the southern network of the Saskatchewan Power Corporation.

Alberta's major hydro-electric installations are located on the Bow River and its tributaries in the south-eastern region of the province. While other reserves of water power are available in the northern areas, increasing demands for power in southern Alberta have been met by thermal-electric

plants for which economic sources of fuel are in abundant supply. At the end of 1960, the total installed thermal-electric capacity in the province exceeded 625,000 kw. Plant capacities of 255,000 kw. and 132,000 kw. at Edmonton and Wabamun, respectively, make up over one-half of the province's thermal capacity. The Wabamun plant will be increased to 282,000 kw. on completion of a 150,000-kw. steam unit late in 1962. In the hydro-electric field, Calgary Power Ltd. completed extensions totalling 102,000 hp. at its Spray and Rundle plants, raising the total water power capacity in the province to 414,455 hp. Also, construction was continued at Big Bend on the Brazeau River where an initial capacity of 200,000 hp. in one unit is expected for operation in late 1964.

Twin mile-long penstocks carry Bridge River water to Bridge No. 2 powerhouse from the downstream end of a 2 $\frac{1}{4}$ -mile tunnel under Mission Mountain in British Columbia for a drop of more than 1,000 ft. The giant pipes, 9 ft. in diameter, cost about \$6,000,000 installed.



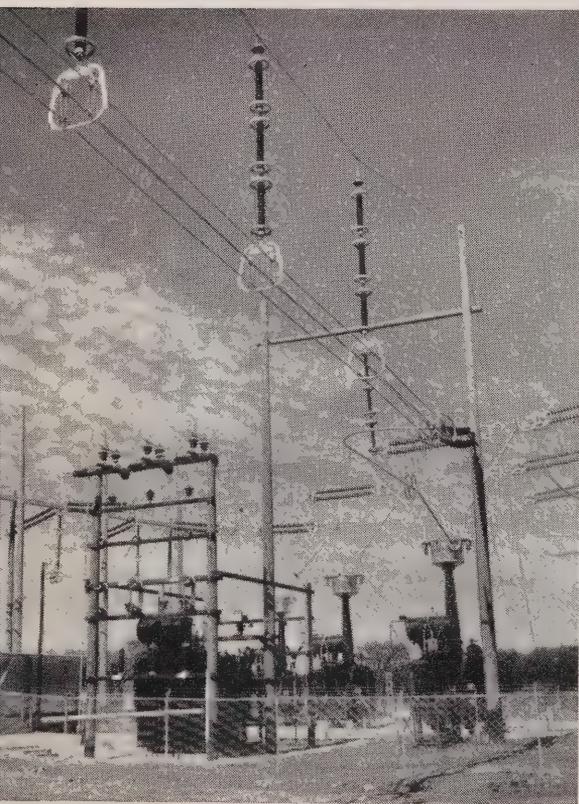
British Columbia

British Columbia has many mountain rivers which offer opportunity for power development. The province ranks second in available resources and is exceeded only by Quebec and Ontario in installed capacity. Notwithstanding this wealth of water power, some 410,000 kw. of thermal generating capacity has been installed in the province and construction was continued at the new Ioco station on Burrard Inlet where ultimate development is expected to realize 900,000 kw. in 6 units.

The British Columbia Electric Company Limited, with a total hydro-electric capacity of 1,385,835 hp. and additional thermal generating capacity of 100,000 kw., is the major power producer and distributor in the province. In 1960, the Company installed the remaining 164,000 hp. in its Bridge River System, raising the capacity of the over-all development to 692,500 hp. in four plants. The British Columbia Power Commission, with 412,800 hp. of hydro-electric capacity and some 170,000 kw. of thermal generating capacity is also an important producer and distributor. Of major significance to the Commission are plans for the development of storage on the Columbia River in Canada. Subject to a treaty recently negotiated between Canada and the United States, the storage would be provided in Canada for the benefit of plants in the United States and the benefits would be shared equally between Canada and the United States. It is estimated that Canada's initial share of the benefits will total approximately 6,750,000,000 kwh. of annual energy from 1,300,000 kw. of dependable capacity.

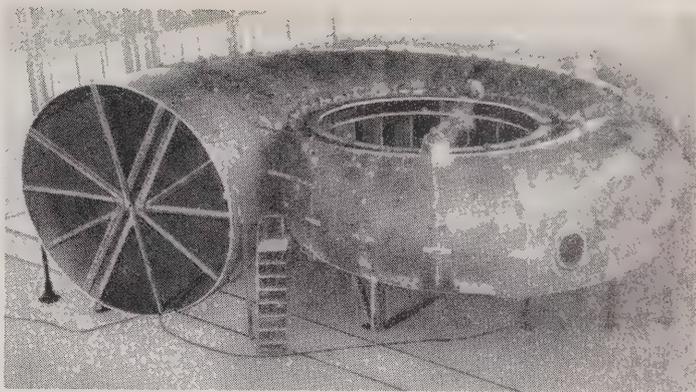
Large hydro-electric capacities have been installed in the province by companies concerned with the mining, refining and wood products industries. Foremost of these is the 1,050,000 hp. Kemano development of the Aluminum

Company of Canada Limited—the largest single development in British Columbia. Similarly important is the 569,000 hp. in five developments installed by the Consolidated Mining and Smelting Company for use in its mining and chemical operations. In the wood products industry, two plants totalling 100,960 hp. have been installed by MacMillan-Bloedel and Powell River Limited.



Of importance to the development of far northern rivers are new techniques in high voltage transmission. Ontario Hydro is developing the first major project of this type in North America. This is the nerve centre of its test line at Coldwater. The three single-phase high-voltage test transformers can be readily identified by the bushing-top instrument houses. They are designed to operate continuously at voltage up to 500,000. The control room is at the lower left.

Looking like ants on a huge sea shell, welders put finishing touches on one of four spiral casings for Ontario Hydro's Otter Rapids Development on the Abitibi River in northern Ontario. The units are part of four hydraulic turbines, each with a seven-blade propeller, making it the highest head fixed blade type in the world. This development is expected to realize 480,000 hp.



Yukon and Northwest Territories

Substantial water power resources in Yukon Territory are located on the Yukon River and its tributaries; in the Northwest Territories more than half the resources are located on rivers flowing into Great Slave Lake. At present, total hydro-electric turbine capacity in the two territories amounts to 60,440 hp. The Northern Canada Power Commission which has a total hydro-electric capacity of 38,550 hp. in four developments, is the major producer and distributor of electric power in the two territories. Six diesel plants with capacities varying from 300 kw. to 3,000 kw. are also operated by the Commission in the Northwest Territories.

Electric Power Statistics

The total electric energy generated in Canada in 1959 amounted to 104,613,564,000 kwh. This figure includes energy generated by publicly or privately owned utilities and energy generated by industrial establishments, mainly for use in their own plants. Of the total, 93 p.c. was produced from water power and the remainder was generated thermally; 4,580,619,000 kwh. were exported to the United States.

Electric utilities provide much of the power for industry, but many large industrial establishments generate their own requirements. In 1958 manufacturing industries purchased 32,845,865,000 kwh. but generated 19,045,062,000 kwh. for their own use. Of this amount, 4,417,401,000 kwh. were generated by pulp and paper industries and 12,462,897,000 kwh. by smelters and refineries. The primary mining industry purchased 5,334,125,000 kwh. from electric utilities but generated 627,183,000 kwh.

In 1959 there were 4,381,564 domestic, including rural, customers in Canada compared with 4,188,946 in 1958. The amount of electricity consumed domestically advanced from 17,290,984,000 kwh. to 19,007,111,000 kwh., or from 4,128 kwh. to 4,338 kwh. per customer. The per customer consumption varied widely among the provinces; Manitoba led with 5,993 kwh. while Prince Edward Island and New Brunswick had the lowest averages. Farm customers added during 1959 numbered 14,573.

Canadians enjoy one of the lowest rates per kilowatt hour in the world. The revenue from domestic consumers averaged 1.61 cents per kwh. in Canada in 1959 as compared with 2.50 cents in the United States, and commercial and industrial sales averaged 0.8 cents per kwh. in Canada compared with 1.3 cents in the United States. The 1959 average bill for domestic and farm service stood at \$69.76 against \$66.49 for 1958, an increase of 4.9 p.c., while consumption per customer rose 5.1 p.c. Provincial bills ranged from \$99.81 in British Columbia to \$57.37 in Quebec.



This oil refinery in Halifax, one of the largest in Canada, turns out each day more than 1,500,000 gallons of oil products— enough to supply the petroleum needs of the four Atlantic Provinces and part of Quebec. The refinery was rebuilt in 1956 at a cost of \$28,000,000.

Industrial Development

The industrial expansion of Canada since Confederation has been phenomenal. In the past generation alone, Canada has changed from a country producing and exporting mainly primary products to one that is increasingly producing and exporting manufactured products, until today manufactures account for over 26 p.c. of the value of all goods and services produced, and also rank as the leading employer of labour.

Technological advances, new techniques of geological surveying and power generation and transmission have accelerated the rate and range of discovery of the underground wealth of this country and greatly facilitated its profitable exploitation. New fuels in abundance, new means of transport and communication, new structural materials and new industrial processes have drastically modified the whole framework of economic development. These are the factors which underlie the transformation of the country's economic potentialities into a diversified and complex industrial economy.

Canada is no longer on the fringes of industrialization but ranks among the world's most important manufacturing countries. Basic historical developments, such as the opening of the West and the magnitude of requirements of all kinds for World Wars I and II, have been followed by recent discoveries of far-reaching significance. Such events as the discovery of a major oil pool on the Prairies in 1947, the discovery of large-scale deposits of iron and the successful search for uranium have given new dimensions to Canadian thinking and business planning. These are the factors that explain the records of capital expenditures year by year since the end of the War. Yet it is not the mere rate of expansion that is significant. There have been other periods when Canada's population has grown more rapidly and, in many respects, the rate of industrial expansion in the late 1920's was relatively as great as in the post-war years. The real significance of the latter period is that never before had there been an advance on such a broad industrial front.

The second point to be observed is the changing emphasis of Canadian manufacturing activity. By 1949, the period of post-war conversion was past and Canada had entered a new phase of economic expansion which derived its dynamic from the discovery of new resources and the application of new processes. This meant that even the sharp recession in the United States in the year 1949 failed to have significant effects in Canada. The influence of Korea and the consequent rearmament program gave an added impetus to the expansion of Canadian industry and to the development of Canadian basic resources. Capital expenditures that contributed most to the defence of Canada were given priority. Additional capacity was created to meet requirements of the specialized defence program—aircraft, electronic equipment, ships and guns—many items of which had never before been produced in Canada. Measures such as steel control, credit regulations and deferred depreciation had the desired effect. A shift gradually took place toward the further expansion of basic industrial capacity and away from investment in consumer goods and services.



At windswept Bell Island, Newfoundland, iron ore from the world's largest subterranean mine fills seagoing ore carriers at a rate of several tons per minute.

The stability of current levels of manufacturing is indicated by the fact that such activity is the result of business assessments of resources and market potentialities. Millions of dollars are being invested in oil because the Prairies can produce oil as economically as other great fields on the North American continent. Petrochemical plants are being erected because the raw materials are readily at hand. Kitimat is based on the coincidence of abundant and cheap hydro-power and access to ocean transportation, both of which are essential to the low-cost production of aluminum. The exploitation of the Ungava iron deposits rests on the belief that the steel industry of the North American continent will need the high-grade ores involved in order to meet continuing peacetime demands. No country is in a more favourable position than Canada to supply uranium for the production of atomic energy.

Of strategic importance, and probably of even greater long-term significance to the Canadian economy, has been the growing world-wide shortage of raw materials; a shortage born of rising levels of employment and income, and accentuated by the course of international events, especially since 1950. These demands have shown few signs of abating and they have led to substantial increases in Canadian primary manufacturing capacity, particularly insofar as the light metals, nickel, chemical fertilizers and the cheaper grades of paper are concerned.

Although the distribution of the gross national product among the main industry sectors in recent decades shows a continuous decrease in the proportional output derived from agriculture in contrast with the upward trend in resources and manufacturing industries, Canada's farms are steadily increasing their unit output and generally lowering unit costs under the impact of mechanization and the adoption of other improvements which are making agriculture progressively more commercial in character. Scientific developments and improved utilization and conservation methods are likewise rendering Canada's vast forest potential more productive; during the past decade the net value of production of the wood and paper group of industries rose 66 p.c., from \$911,395,000 in 1948 to \$1,516,371,000 in 1958.



This new oil-seed crushing plant at Lethbridge, Alberta, came into operation in 1960 with an initial capacity of 60 tons of crude oil daily. It also has facilities for seed-cleaning.



The stripper tower rises above a workman on the naphtha desulphurizer at a Calgary refinery. This unit is the largest addition in a \$1,500,000 expansion program which has increased crude running capacity from 7,500 to 10,000 barrels per stream day.

and variety of energy resources. Thus, to Canada's rich coal resources of some 98,000,000,000 tons and its abundant and widely distributed water-power resources (currently recorded as sufficient to permit a hydro-electric turbine installation of 87,000,000 hp. and having an installed capacity of 22,379,626 hp.) may be added vast resources of petroleum and natural gas in its extensive interior plains, estimated in December, 1960 to comprise proved recoverable reserves of 4,217,000,000 bbl. and 30,674,000,000,000 cu. ft. respectively.

The tremendous activity that has recently taken place in the transporting, refining and marketing of oil and gas energy resources has significantly strengthened the Canadian economy. As a result of several major pipeline operations and the attendant expansion of strategically placed oil refineries, Canada is rapidly becoming self-sufficient in oil and gas, and the economy of the western provinces and Ontario is undergoing important structural changes through the establishment of ancillary industries utilizing these fuels; the thriving petrochemical industries close to the major refining centres or near the low-cost natural gas and oil fields are striking examples.

Canada is, moreover, a leading world source of uranium ores, one of the newest and most spectacular of energy resources. Its 20 uranium mines in production at the end of 1959 with 16 processing plants had attained a uranium ore capacity of 39,700 tons a day. Canada is also among the leaders in atomic research for industrial purposes and has under construction an atomic power station for experimental purposes in the technical field of electric power generation through the use of nuclear fuels.

Despite the fact that less than one-third of Canada's land area has undergone geological reconnaissance mapping and a much smaller area on a scale adequate for mineral exploration, the rich variety, steadily expanding accessibility and abundant wealth of its mineral resources so far brought to light, place Canada among the great mineral-producing nations. A measure of the

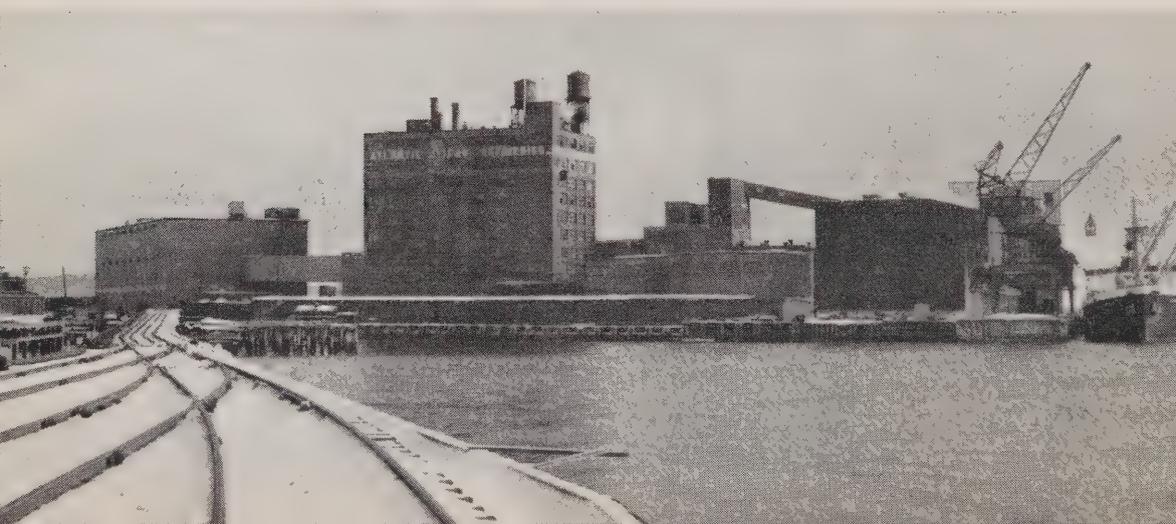
growth and significance of the Canadian mining industry may be observed in the following tabulation.

Mineral	Av. 1945-49	1959	1960 (estimate)	1960 as p.c. of 1945-49	Canadian Production as p.c. of 1959 World Production	Canada's World Rank 1959
Copper.. '000 tons	230.3	395.3	438.4	190.4	10	5
Nickel.. "	119.5	186.6	213.6	178.7	60	1
Gold... '000,000 oz. t.	3.3	4.5	4.6	139.4	11	2
Zinc... '000 tons	244.9	396.0	405.6	165.6	13	3
Iron ore.. "	1,923.3	24,488.3	21,507.8	1,118.3	5	5
Lead... "	167.9	186.7	189.3	112.7	8	4
Uranium '000 lb.	—	31,784.2	25,034.9	—	—	2
Asbestos '000 tons	595.7	1,050.4	1,140.5	191.5	46	1
Gypsum.. "	2,275.7	5,878.6	5,161.0	226.8	14	2
Petroleum '000 bbl.	11,470.5	184,778.5	192,308.3	1,676.5	3	8
Silver... '000,000 oz. t.	14.3	31.9	32.3	225.9	15	2

That Canada in ten years has more than doubled its mineral production indicates that it is producing many basic minerals vital to its own economy and in short supply in other countries. Furthermore, the fact that these resources are available in a politically and economically sound Canada has attracted a remarkable inflow of investment capital and technical skills from the United States. Increased Canadian and foreign investment in new mines, in oil fields and related industrial projects, and in new transportation facilities has brought about substantial shifts in Canada's economic geography, broadening the distribution and diversification of industry and strengthening the national economy.

With the minor recession which set in about the middle of 1957, some phases of the industrial development moderated as compared with 1956 when construction on some major projects was at its peak, and the stockpiling of strategic minerals by NATO powers was still a significant factor. Rapid

Extensions to this sugar refinery in Saint John, New Brunswick, include the new refined sugar warehouse on the left and, on the right, the new sugar warehouse, cranes and dock.





The famous open pit iron mine at Steep Rock, Ontario, where the ore is mined in 30-foot cuts or benches. Explosive is used to blast the ore into a size that can be carried away by diesel truck. Canada now ranks second (after France) among the world's iron ore exporting countries.

recovery in industrial production occurred in 1959 so that the various economic indicators continued to provide additional evidence that Canada is rapidly assuming the status of a great industrial nation. Not only has industrial production regained the lost ground, but in 1959 it surpassed the previous high attained in 1957 by about 6 p.c. Compared with the previous year, industrial production rose 8.4 p.c., the index reaching an all-time high of 165.4. Electric power generated in 1959 was 9.7 p.c. higher, the volume of mineral production 10.9 p.c. higher, while the volume of manufactured products advanced 6.9 p.c. In the manufacturing sector, durable goods rose 7.5 p.c. and non-durable goods 6.7 p.c. There are also other indicators which give evidence of continued growth. Between 1951 and 1959, Canada's population increased by 24.5 p.c., its per capita disposable income from \$1,056 to \$1,368 or by 29.5 p.c., its per capita gross national product from \$1,511 to \$1,983 or by 31.2 p.c., and its volume of industrial production by 41 p.c. The rapid growth that took place during 1955 and 1956 moderated slightly during the two years following. Although the population and per capita disposable income continued to rise, the volume of industrial production declined about 2 p.c. in 1958 as compared with 1957 when industrial production was the highest on record. Canada's foreign trade, likewise a significant measure of the nation's industrial expansion, reached an all-time high level of \$10,569,000,000 in 1956, a point almost retained in 1957. Indicative of the minor decline in the economy in 1958 was the drop of 8 p.c. in imports during the year as compared with 1957. Exports held firm, dropping only from \$4,934,000,000 in 1957 to \$4,894,000,000 in 1958. The general recovery in business activity in 1959 boosted exports to \$5,140,000,000, an increase of 5 p.c., and imports to \$5,509,000,000 or an increase of 9 p.c.

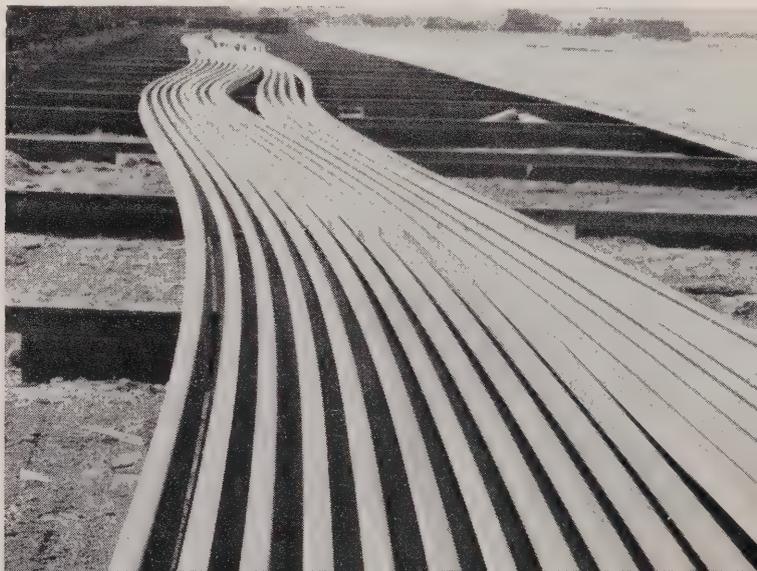
Manufactures

Canada's growth from Confederation to World War I was characterized by geographical expansion, new settlement, and the discovery and exploitation of natural resources. Since that time, it has been a story of rapid achievement of industrial maturity. In 1958 some 1,290,000 employees in some 37,000 manufacturing establishments earned a total of \$4,802,000,000 in salaries and wages, and were responsible for a gross value of factory shipments amounting to \$22,163,000,000. If the cost of materials, fuel and electricity is subtracted from the gross value of production, a net value of \$9,793,000,000 is established. The expansion in manufacturing production which took place since the beginning of the present century is revealed by a comparison with the year 1900 when 14,650 establishments were recorded. These establishments employed 339,000 workers and produced goods that had a gross value of production of \$481,000,000 and a net value of \$215,000,000.

Historical Development. The first phase of Canada's industrial development began about 1860. Rising prosperity until 1873 resulted in the establishment of factories producing goods for local consumption from the abundance of raw materials at hand—flour and gristmill products from the grain, leather boots and shoes from the livestock, and lumber, lath and shingles from the forests. These industries weathered the depressed economic conditions that prevailed during the latter part of the 1870's and a good part of the 1880's, mainly because Canada's high-quality natural resources could be developed at low cost, and also because the expanding railway network and cheap water transport made them increasingly accessible.

The period 1900 to 1920 was characterized by rapid population increase and the opening up of the West. The program of railway construction, the growth of cities and towns, the equipping of western farms and the extension of community facilities in both Eastern and Western Canada gave great impetus to the production of capital goods. World War I brought about a notable acceleration of industrial diversification with particularly striking effects on the refining of non-ferrous metals, the expansion of the steel industry and the shipbuilding and aircraft industries. Following the War, international competition became very keen and Canadian industries experienced some adjustment, particularly in the short though severe recession of 1921. This

These sections of main-line railway track are parts of quarter-mile sections of welded rail made in Winnipeg. The long lengths which bend easily were installed in the Rocky Mountains in 1960. This type of construction reduced the number of rail joints per mile from 240 to eight.





The first carloads of steel pipes shipped out of the tube plant at Camrose, Alberta, following completion of a \$3,000,000 extension program. These big pipes will be used in the construction of oil and gas pipelines.

check was temporary and expansion was resumed up to the crest of 1929, with particular emphasis on pulp and paper, transportation equipment, non-metallic mineral products and chemicals. During this period, certain Canadian industries became competitive with those of other countries in both quality and price. One of the earliest examples was the farm implements industry and another was the pulp and paper industry, which was able to compete successfully in important foreign markets in the 1920's and still remains Canada's leading manufacturing industry.

In fact, the development of Canada's secondary manufacturing industries, although perhaps less spectacular and less publicized than its primary manufacturing, has carried the country well along the way to becoming a nation of urban factory and office workers. Secondary manufacturing industries now account for about three-quarters of the output and a slightly higher proportion of employment in the whole manufacturing sector of the economy; they are characterized by a high degree of processing, a major dependence on the domestic market, and a tendency to be located close to the centre of that market. Their growth has contributed greatly to the creation of a more broadly based and much more diversified economy, and they are typically established around the fringes of the larger cities. Driving through the outskirts of Montreal or Toronto, for example, one passes a succession of new plants, large and small, built to produce electronic equipment, television sets, plastics, steel pipe, diesel locomotives, aircraft and aircraft parts and consumer goods of all kinds, few of which were produced in Canada in any quantity before the war.

It is only in the past two decades that manufacturing has attained its position of pre-eminence in the Canadian economy. When war broke out in 1939, Canadian industry responded to a flood of military orders and expanded and diversified at a dramatic rate. Canada, along with the United States, became "the arsenal of the free world". Productive capacity, inadequate to meet the demands placed upon it, underwent intensive expansion, particularly in the heavy industries producing automobiles, aircraft, ships and steel. There was spectacular development in such fields as aluminum, electrical apparatus, toolmaking and chemicals. Fewer imports meant more domestic production of such consumer goods as textiles, shoes, apparel and many other

Canadian branches of foreign industries are springing up throughout Canada. This girl is working in an Italian sweater factory in Stellarton, Nova Scotia.



⌠ Honey production in the Prairie Provinces is a valued industry. In this recently built modern processing plant at Tisdale, Saskatchewan, a worker fills cans with creamed honey, a process that is almost entirely automatic in this plant.

products, and, by the end of the war, well over 1,000,000 workers were employed in manufacturing industries, more than 25 p.c. of the labour force.

The post-war period brought neither a reversal of the outstanding industrial progress of the war years nor any major setback. Reconversion from wartime to peacetime production was completed within two years, and most industries embarked upon programs of modernization and expansion. The outbreak of the Korean war in 1950, Canada's obligations under the NATO treaty, and heavy annual defence expenditures served to stimulate industries in the fast-developing fields of electronics, jet aircraft and engines, and shipbuilding. Full employment, immigration, a high birth rate—all made for strong and sustained consumer demand. Automobiles, radio and television sets, refrigerators and other electrical equipment and telephones became common to the great majority of Canadian homes.

In less than twenty years the number of manufacturing establishments increased by almost 50 p.c. and the total number of workers in industry by about 100 p.c.

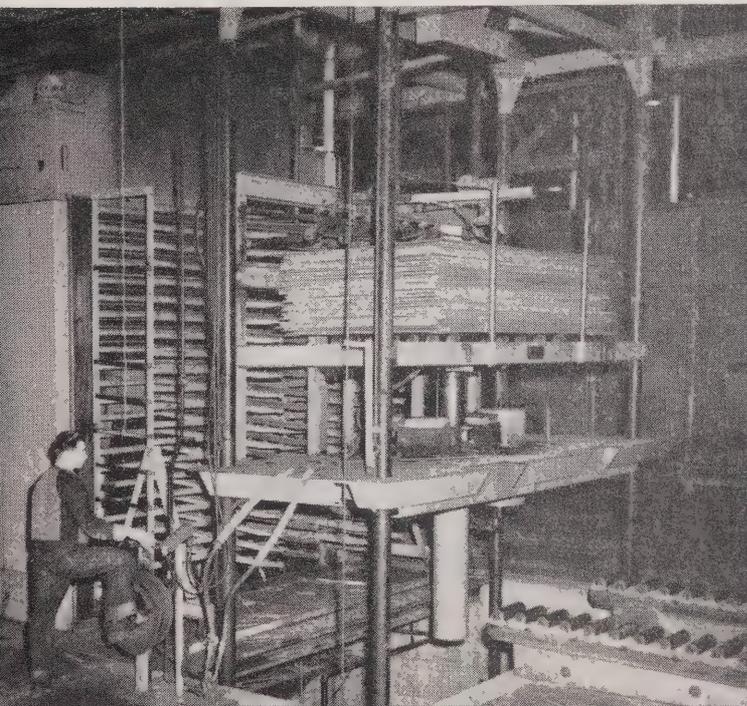
Directly, manufacturing supports nearly one-third of the whole population; it contributes significantly to the employment of other Canadians through purchases by manufacturers and their employees of raw materials, foods, farm products and transportation services, to mention only the more important. There are now as many Canadians employed in manufacturing as in the combined industries of farming, forestry, fishing, mining and construction. The value of manufactures—\$9,793,000,000 in 1958—was over one-quarter of the gross national product for that year.

The minor recession that commenced in the fall of 1957 continued for over a year to November 1958. In comparing the two years it is found that the value of factory shipments in 1958 at \$22,163,186,000 was only fraction-

ally lower than the shipments in 1957, a year of record attainment. The decline in the physical output, however, at 2.7 p.c. was more substantial and compared with a drop of only 0.1 p.c. in value of shipments. This is accounted for by an increase in the wholesale prices of partly and fully manufactured goods. The decline in production was also accompanied by a drop of 5.1 p.c. in the number of persons employed. This when compared with a drop of only 2.7 p.c. in the physical volume of production follows the trend in recent years for the same volume of output to be produced with fewer employees. Considerable improvement in manufacturing production was experienced in 1959, both the selling value and volume of production increasing by 7.0 p.c. There was also an increase of 1.2 p.c. in the number of persons employed which was far short of the 7.0 p.c. increase in the value and volume.

As indicated above, the index of the volume of manufacturing production indicates that production continues to rise faster than employment. In 1947 the index was 93.2 compared with an average of 100.0 for the year 1949. In 1958 it was 139.1, an increase of 50 p.c. since 1947. The advance in employment during the same period was but 14 p.c.

The following table shows the long-term growth in Canadian manufacturing. These figures are reasonably comparable but, since they cover so long a period, allowances should be made for certain changes in information collected and in treatment of the data. For instance, in 1952 the collection of data on gross value of production was replaced by value of factory shipments. The former included all goods produced during the year irrespective of whether they were shipped from the factory during that year. The latter includes all goods leaving the plant during the year regardless of when produced. The difference is not great since most goods are shipped during the year in which they are manufactured. Gross values of production or shipments represent more than the actual contribution of the industry to the economy. They give the value of goods leaving the industry and therefore include all the work put into them at earlier stages of production.



Veneer lay-ups with an even spread of glue are fed into the hot press. Here a temperature of 285°F, and a pressure of 200 pounds per square inch combine to give plywood its waterproof glue bond.



Quebec produces 70 p.c. of the women's factory clothing made in Canada. In this plant, individual high speed sewing tables are used and women's dresses are made by piece section work.

Summary Statistics of Manufactures, 1917-59

Year	Estab- lish- ments	Employees	Salaries and Wages	Cost of Materials	Net Value Added by Manu- facture ¹	Gross Value of Products ²
	No.	No.	\$'000	\$'000	\$'000	\$'000
1917.....	21,845	606,523	497,802	1,539,679	1,281,132	2,820,811
1920.....	22,532	598,893	717,494	2,085,272	1,621,273	3,706,545
1929.....	22,216	666,531 ³	777,291	2,029,671	1,755,387	3,883,446
1933.....	23,780	468,658	436,248	967,789	919,671	1,954,076
1939.....	24,805	658,114	737,811	1,836,159	1,531,052	3,474,784
1940.....	25,513	762,244	920,873	2,449,722	1,942,471	4,529,173
1943.....	27,652	1,241,068	1,987,292	4,690,493	3,816,414	8,732,861
1945.....	29,050	1,119,372	1,845,773	4,473,669	3,564,316	8,250,369
1947.....	32,734	1,131,750	2,085,926	5,534,280	4,292,056	10,081,027
1948.....	33,420	1,155,721	2,409,368	6,632,882	4,938,787	11,875,170
1949 ⁴	35,792	1,171,207	2,591,891	6,843,231	5,330,566	12,479,593
1950.....	35,942	1,183,297	2,771,267	7,538,535	5,942,058	13,817,526
1951.....	37,021	1,258,375	3,276,281	9,074,526	6,940,947	16,392,187
1952.....	37,929	1,288,382	3,637,620	9,146,172	7,443,533	16,982,687
1953.....	38,107	1,327,451	3,957,018	9,380,559	7,993,069	17,785,417
1954.....	38,028	1,267,966	3,896,688	9,241,858	7,902,124	17,554,528
1955.....	38,182	1,298,461	4,142,410	10,338,202	8,753,450	19,513,934
1956.....	37,428	1,353,020	4,570,692	11,721,537	9,605,425	21,636,749
1957.....	37,875	1,359,061	4,819,628	11,900,752	9,822,085	22,183,594
1958.....	36,741	1,289,602	4,802,496	11,821,567	9,792,506	22,163,186
1959 ⁵	—	1,305,100	5,081,000	12,639,000	10,007,000	23,713,000

¹ For 1924-51, value added by manufacture is computed by subtracting the cost of fuel, electricity and materials from the gross value of products; for 1952 and 1953 the deduction is made from value of factory shipments and for 1954 to 1959 from the calculated value of production. Figures prior to 1924 are not comparable since statistics for cost of electricity are not available.

² In 1952 gross value of products was replaced by value of factory shipments; see text above.

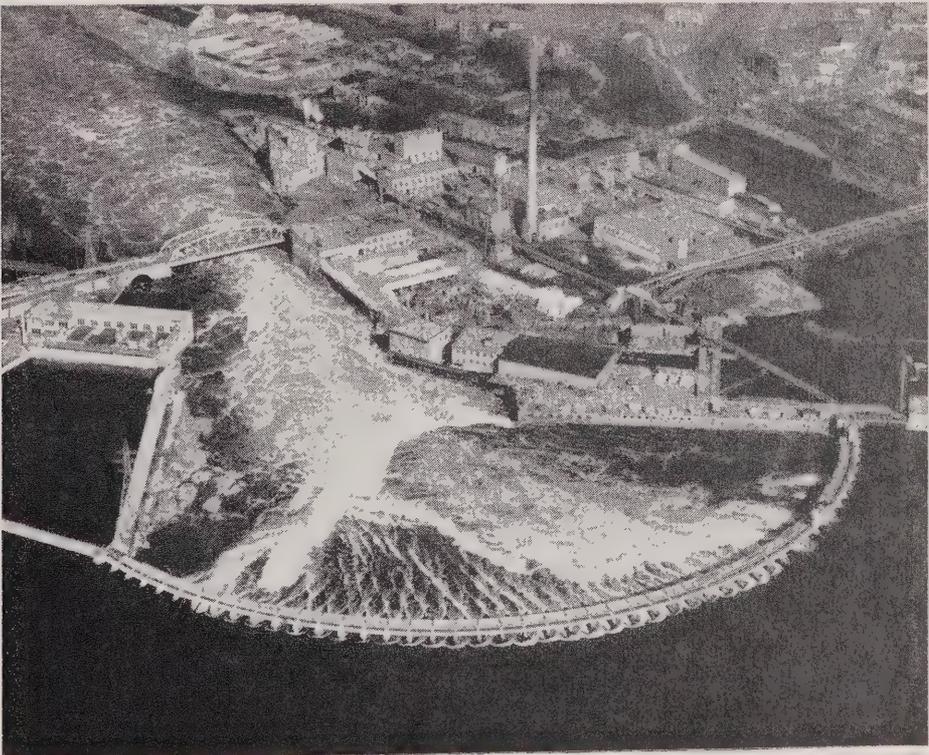
³ A change in the method of computing the number of wage earners in the years 1925-30 increased the number somewhat over that which the method otherwise used would have given.

⁴ Newfoundland included from 1949 but figures for 1949 and 1950 exclude fish processing.

⁵ Estimate.

Hundreds of new commodities have been added to the list of Canada's manufactures in recent years, and significant changes have been made in the ranking of certain industries. Indicative of the rapid industrialization and changing pattern of Canadian manufacturing production during the past decade is the increasing importance of the industries producing durable goods. Aircraft and parts which did not rank among the leading industries in 1949 advanced to ninth place in 1958; miscellaneous electrical apparatus and supplies from nineteenth to tenth place; industrial machinery from twenty-sixth to fifteenth place; miscellaneous food preparations from twentieth to eleventh place; primary iron and steel from eighth to sixth place; and petroleum products from fifth to second place. On the other hand, moderate declines were recorded by some of the consumer goods industries. Slaughtering and meat packing dropped from second to fourth place; sawmills from sixth to seventh place; butter and cheese from seventh to eighth place; railway rolling stock from ninth to eighteenth place; flour mills from tenth to thirty-second place; cotton yarn and cloth from twelfth to thirty-fifth place; men's clothing from eleventh to twenty-second place; and women's clothing from fourteenth to twenty-seventh place. Of the leading industries only two retained the same position in 1958 as they did in 1949; pulp and paper in first position and non-ferrous metal smelting and refining in third position.

An unusual view of the Chaudière Falls at Hull, Quebec, harnessed to provide electric power for the paper mill, part of which is shown.

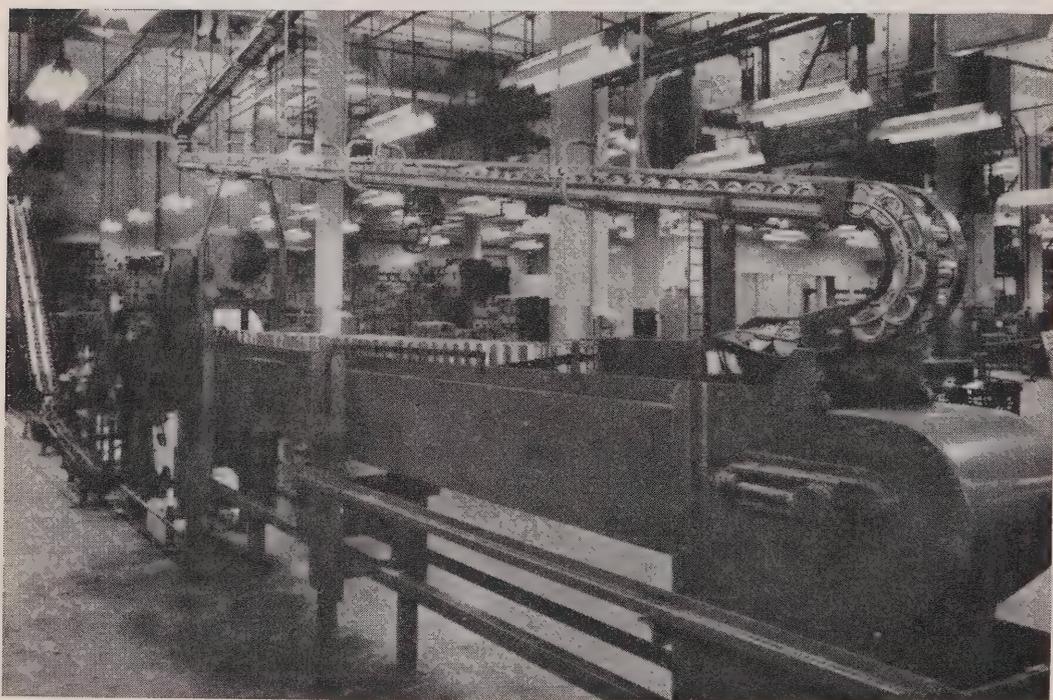


The following table gives principal statistics of the fifteen industries with the largest values of factory shipments in 1958.

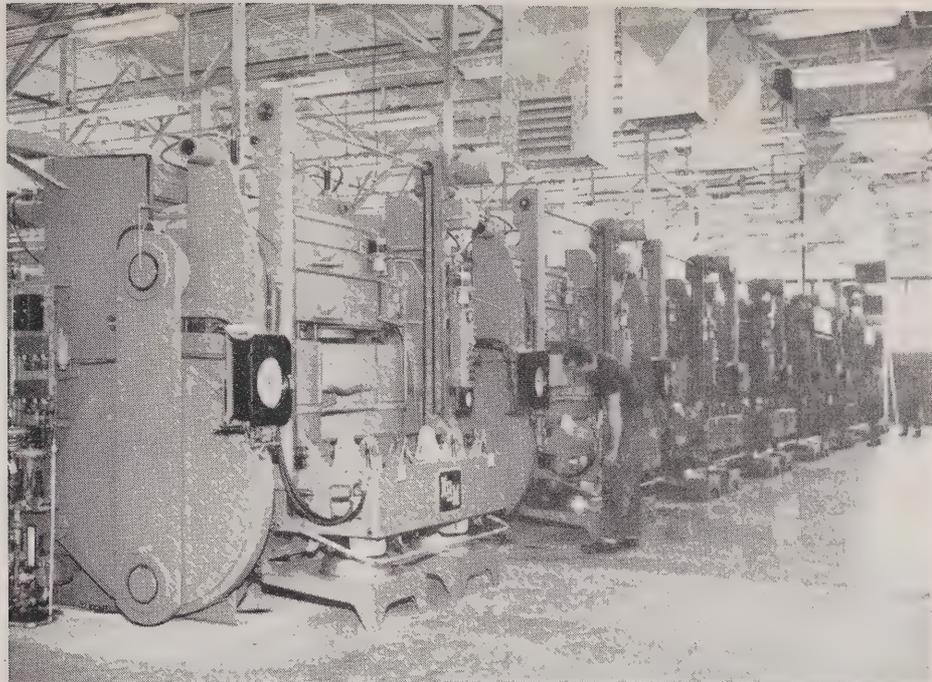
Principal Statistics of the Fifteen Leading Industries, 1958

Industry	Estab- lish- ments	Em- ployees	Salaries and Wages	Cost at Plant of Materials Used	Value Added by Manu- facture	Selling Value of Factory Shipments
	No.	No.	\$'000	\$'000	\$'000	\$'000
Pulp and paper	128	64,084	307,416	597,805	702,951	1,394,679
Petroleum products	71	14,490	76,644	829,920	487,676	1,368,649 ¹
Non-ferrous metal smelting and refining	25	26,959	131,081	693,797	378,451	1,135,771
Slaughtering and meat packing	178	25,712	102,677	852,842	196,229	1,050,461
Motor vehicles	15	26,396	129,719	571,501	253,945	847,342
Primary iron and steel . .	50	30,261	148,023	250,669	304,924	590,318
Sawmills	5,769	47,763	142,700	300,342	236,753	546,299 ¹
Butter and cheese	1,222	20,879	69,034	390,475	118,079	522,793
Aircraft and parts	75	39,932	182,277	176,539	281,132	462,331 ¹
Miscellaneous electrical apparatus and sup- plies	179	25,116	101,161	164,053	175,828	347,837
Miscellaneous food pre- parations	299	9,752	34,397	223,012	121,111	345,905
Bread and other bakery products	2,637	35,618	106,969	157,268	172,606	340,918
Sheet metal products . . .	473	19,107	78,135	175,252	154,400	333,265
Printing and publishing	746	30,557	127,741	86,412	238,784	327,687
Machinery, industrial . . .	379	23,347	95,602	133,424	167,443	311,095
Totals, Fifteen Leading Indus- tries	12,246	439,973	1,833,576	5,603,311	3,990,312	9,925,350
Totals, All In- dustries	36,741	1,289,602	4,802,496	11,821,567	9,792,506	22,163,186

Reported on a production basis.



Cans of soup move along the production line to the labelling operation in this new multi-million dollar food processing plant opened in October, 1960 in Portage la Prairie, Manitoba.



West of Ontario for the first time, manufacture of rubber tires was begun in two Alberta plants, in Calgary and Medicine Hat, during the summer of 1960. This shows the interior of the factory at Medicine Hat.

Provincial Distribution

Fully one-half of all Canadian manufacturing output is concentrated in **Ontario**, although the province also has the largest number of occupied farms and is the leading producer of both minerals and furs. Ontario's industrial development has been largely influenced by its geographic location on the Great Lakes waterways within easy reach of Pennsylvania's coal and Minnesota's iron ore, both indispensable to Ontario's steel mills. The province's excellent—and low cost—hydro-electric power resources, the diversity of raw materials to be had from farm, forest and mine and, not least, the fact that one-third of all Canadians live there, have been hardly less important factors in attracting industry.

Ontario has the greatest diversification of manufacturing production of any province. Certain industries, such as the manufacture of motor vehicles, motor vehicle parts, machine tools, starch and glucose and the processing of raw tobacco are carried on practically in this province alone. By value, the province turns out 90 p.c. or more of Canadian production of motor vehicles, motor vehicle parts, heavy electrical machinery, agricultural implements, machine tools, starch and glucose, tobacco processing, miscellaneous non-ferrous metal products, bicycles and prepared breakfast foods; between 80 and 90 p.c. of soaps and washing compounds, rubber goods, household and office machinery, wine, leather tanneries and typewriter supplies; and between 70 and 80 p.c. of cordage, rope and twine, sporting goods, primary iron and steel, telecommunications equipment, refrigerators, vacuum cleaners, etc., hardware, tools and cutlery, automobile accessories, fabric, toys and games, artificial abrasives, jewelry and silverware, white metal alloys, wool yarn and batteries.

Other industries in which more than 50 p.c. of the value of Canadian shipments come from Ontario are: heating and cooking apparatus, carpets,

mats and rugs, iron castings, fruit and vegetable preparations, stock and poultry feeds, industrial machinery, miscellaneous chemicals, boilers, tanks and platework, brass and copper products, aluminum products, sheet metal products, printing and bookbinding, confectionery, aircraft and parts, acids, alkalies and salts and animal oils and fats. Final figures for 1958 show 606,362 manufacturing employees in the province producing goods with a selling value at the factory in excess of \$10,864,000,000, virtually half the national total.

Quebec, largest in area of Canada's ten provinces, ranks second only to Ontario in manufacturing production and mineral output, as in population. The province accounts for about 30 p.c. of the value of Canadian manufactured goods, most manufacturing industries being concentrated in the fertile and strategic valley of the St. Lawrence. The most important single industry is pulp and paper. Other industries playing a key roll in the economy of the province include: petroleum products, non-ferrous metal smelting and refining, miscellaneous electrical apparatus and supplies, slaughtering and meat packing, women's factory clothing, railway rolling stock, tobacco, cigars and cigarettes, aircraft and parts, cotton yarn and cloth, men's factory clothing, miscellaneous food preparations, furniture, etc. In terms of number of employees, however, Quebec's leading manufacturing industry is primary textiles, which includes production of cottons, woollens, synthetic fibres and fabrics, hosiery, knitted goods, and the dyeing and finishing of textiles. The fast growing aluminum industry is also a major factor in the province's manufacturing production.

As with Ontario, a high proportion of the total Canadian production of a number of the larger industries is concentrated in Quebec. The highest concentration of any industry is tobacco, cigars and cigarettes, with 87 p.c.



A salt dissolving tank, weighing over 14,000 pounds, being installed at the construction site of Canada's first caustic potash plant at Cornwall, Ontario. The plant will supply caustic potash to a number of industries including manufacturers of soaps and detergents.



The output of Canadian cement plants increased 2.3 p.c. in 1959 to 6,300,000 tons. For a number of years following World War II, considerable quantities of cement were imported into Canada; today, imports are insignificant and the industry is exporting about 5 p.c. of its production to the United States.

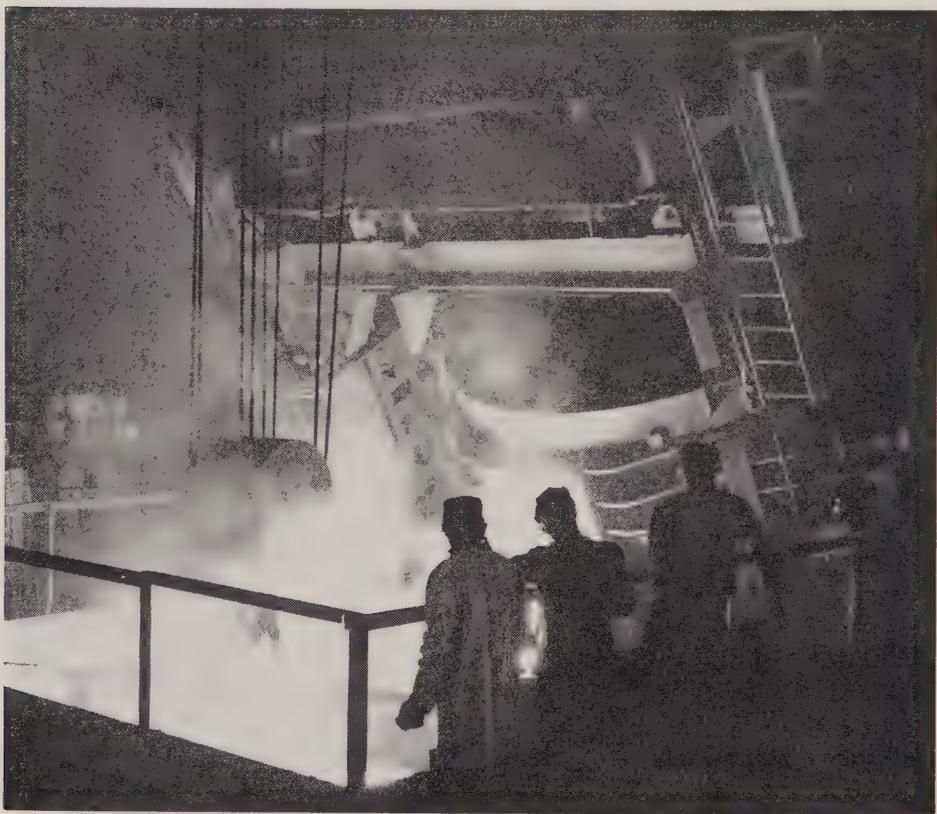
of the Canadian total. Other industries in which Quebec predominates with the percentages of the Canadian total are: women's factory clothing 70, cotton yarn and cloth 69, leather footwear 56, men's factory clothing 54 and synthetic textiles 51.

Quebec also leads in a number of the smaller industries. The candle industry with 94 p.c. of the national total was the leading industry in this category. Other smaller industries with over 50 p.c. of the total are: men's clothing contractors; women's clothing contractors; oiled and waterproofed clothing; cotton thread; children's clothing; embroidery, pleating and hemstitching; narrow fabrics; oilcloth, linoleum and other coated fabrics; fur dressing and dyeing; lasts, trees and shoe findings; process cheese; miscellaneous clothing; boot and shoe findings, leather; artificial flowers and feathers; dyeing and finishing of textiles; fur goods; corsets; buttons, buckles and fasteners; miscellaneous textiles and woollen cloth.

Final figures for 1958 show 429,400 employees in manufacturing and selling value of factory shipments of \$6,754,800,000.

British Columbia, most westerly of Canada's provinces, ranks third in manufacturing production, as in area and population. Rich in raw materials, its forest resources, minerals, fisheries and electric power are the foundation of a rapidly increasing number of manufacturing industries. Chief among these are industries deriving from forest resources—sawmills, pulp and paper, veneers and plywood, sash, door and planing mills, accounting among them for about 44 p.c. of British Columbia's manufacturing employment. Other leading industries include petroleum products, fish processing, slaughtering and meat packing, shipbuilding, food preparations, fertilizers, and printing and publishing. Final figures for 1958 show 100,200 employees in manufacturing industry; selling value of factory shipments during the year about \$1,800,000,000.

Although Ontario, Quebec and British Columbia account collectively for close to 90 p.c. of total Canadian manufacturing production and employment, the other seven provinces also have shared to some extent in the mushroom-growth of the manufacturing industry since 1939. In Manitoba, New Brunswick, Nova Scotia and Newfoundland, manufacturing ranks as the leading industry, while in Alberta, Saskatchewan and Prince Edward Island it is assuming steadily increasing importance.



Saskatchewan has recently built its first steel plant, on the outskirts of Regina, for the production of pipes from 3½" to 16" in diameter. Here one of the two electric furnaces is tipped to pour molten steel into a huge bucket from which it will be poured into ingot moulds. The entire furnace tips forward for this operation.

Statistics of Manufactures, by Province, 1958

Province or Territory	Employees	Salaries and Wages	Selling Value of Factory Shipments
	No.	\$'000	\$'000
Newfoundland.....	9,604	29,234	116,979
Prince Edward Island.....	1,632	3,390	26,888
Nova Scotia.....	29,010	86,006	411,929
New Brunswick.....	20,744	61,077	312,022
Quebec.....	429,358	1,476,606	6,754,798
Ontario.....	606,362	2,412,655	10,864,028
Manitoba.....	42,382	142,859	694,051
Saskatchewan.....	12,283	43,228	331,298
Alberta.....	37,860	140,135	848,252
British Columbia.....	100,222	406,628	1,798,961
Yukon and Northwest Territories.....	145	678	3,980
Canada.....	1,289,602	4,802,496	22,163,186

The prosperity of most of the cities and towns of Canada is intimately connected with their manufacturing industries which provide employment for a large proportion of the labour forces. The following table gives the principal statistics for those urban centres in which manufacturers shipped goods to the value of more than \$100,000,000 in 1958.

Urban Centres with Value of Factory Shipments of Over \$100,000,000 in 1958

NOTE:—Statistics for urban centres cannot be published when one establishment has 75 p.c. or more, or two establishments have 90 p.c. or more, of the total production.

Urban Centre	Estab-lish-ments	Em-ployees	Salaries and Wages	Cost of Fuel and Electricity	Cost at Plant of Materials Used	Selling Value of Factory Shipments
	No.	No.	\$'000	\$'000	\$'000	\$'000
Montreal, Que.....	4,121	173,582	601,773	21,742	1,189,356	2,266,191
Toronto, Ont.....	3,185	123,789	479,767	20,855	973,581	1,825,714
Hamilton, Ont.....	548	50,269	219,874	24,757	452,298	943,304
Montreal East, Que.....	46	7,219	33,453	22,444	455,033	694,077
Vancouver, B.C.....	1,217	32,765	134,591	6,301	292,447	522,600
Windsor, Ont.....	305	22,249	102,997	5,725	220,362	421,681
Sarnia, Ont.....	51	7,211	36,608	23,915	195,774	362,595
Winnipeg, Man.....	820	25,867	85,034	3,683	169,747	324,232
St. Laurent, Que.....	95	18,021	80,499	2,359	103,420	254,580
Edmonton, Alta.....	408	12,869	46,254	2,344	159,165	251,653
Kitchener, Ont.....	196	15,200	54,427	2,604	122,469	232,151
Calgary, Alta.....	344	10,219	39,664	2,662	139,426	224,998
Quebec, Que.....	426	15,469	49,273	6,728	107,258	215,629
London, Ont.....	281	15,110	54,927	2,821	99,818	212,874
Lachine, Que.....	82	13,025	54,366	2,050	87,060	184,897
New Toronto, Ont.....	43	7,372	33,694	2,349	92,407	177,033
Sault Ste. Marie, Ont.....	48	8,514	41,665	7,595	82,396	163,758
St. Boniface, Man.....	95	5,093	18,455	2,311	122,900	163,199
Peterborough, Ont.....	93	9,480	48,463	1,498	73,803	148,137
Brantford, Ont.....	173	10,781	38,733	2,253	72,498	144,356
LaSalle, Que.....	48	5,266	21,210	1,657	67,579	134,228
Ottawa, Ont.....	290	9,968	36,207	2,655	58,484	130,610
Three Rivers, Que.....	89	8,384	28,946	8,236	53,232	123,324
Shawinigan Falls, Que.....	47	5,787	24,816	10,526	50,731	120,642
Mount Royal, Que.....	48	5,777	22,815	696	68,495	119,152
New Westminster, B.C.....	105	6,115	24,436	1,951	62,919	116,164
Leaside, Ont.....	46	7,586	31,066	975	57,773	106,448
Regina, Sask.....	147	3,505	13,405	2,976	52,475	100,257



Presentation of a brief to the Royal Commission on Publications, appointed in September, 1960 "to inquire into and report upon the recent and present position of and prospects for Canadian magazines and other periodicals . . . and to make recommendations to the Government as to possible measures which . . . would contribute to the further development of a Canadian identity through a genuinely Canadian periodical press".

Communications

COMMUNICATIONS media in Canada are at present in process of intensive development to meet the needs of the country. Great networks of telephone, telegraph and radio services are linked together to provide adequate and efficient service which, in this era of electronic advancement, is under continual technological change. The familiar challenges of the country—its size, its topography, its climate, its small population—have been met with such success that today Canada possesses communication facilities and service second to none in the world. Further advances are in the making.

Telecommunications

Many telephone systems provide service across the nation; they number more than 2,600 and range in size from large shareholder-owned companies to small co-operative systems in the rural districts. The privately owned Bell Telephone Company of Canada, operating throughout the greater part of Ontario and Quebec, serves 61.2 p.c. of all telephones in the country. The British Columbia Telephone Company, also shareholder-owned, serves 9.3 p.c. of the total. Four private companies cover the Atlantic provinces and three provincially owned systems serve the prairie provinces. The eight largest systems are associated in the Trans-Canada Telephone System to furnish all-Canadian long haul communication services on a nationwide basis.

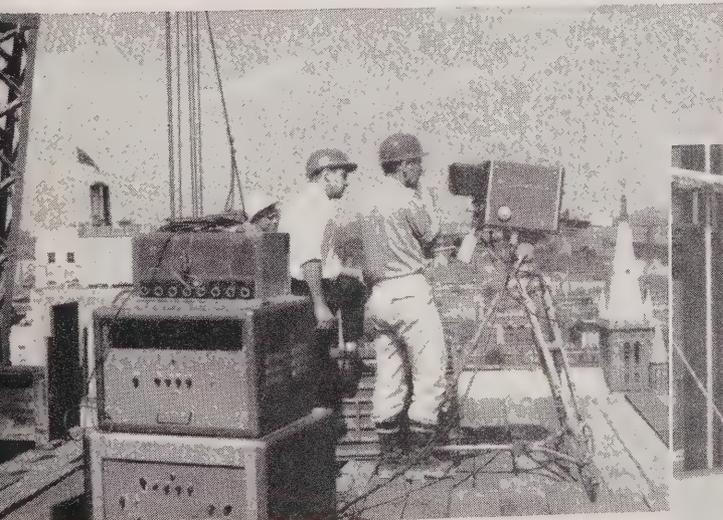


A new development of telephone laboratories, the electronic artificial larynx restores the ability to speak to persons whose vocal chords have been lost or damaged. It is offered in Canada, at cost, by telephone companies.

Canadian use of telephone service runs at a high level. During the past ten years the number of telephones has more than doubled to 5,439,023—one for every 3.2 persons. The estimated number of calls on all systems in 1959 was 9,250,220,035, representing an average of 1,701 calls per telephone and 530.3 calls per person. Long distance calls accounted for 205,395,378 of the total, most of them to points in Canada or between Canada and the United States. Long distance service makes possible the interconnection of practically any telephone across the country with any other; also with telephones in the United States and in most parts of the world. In Canada, long distance telephone service is provided by the separate systems within the territories they serve and, on the national scale, by the Trans-Canada Telephone System.

Improvement and extension of local and long distance service continue to absorb the bulk of invested money and labour. At the same time, with the growth of the economy and its northward-reaching tendencies, Canadian telephone companies are being called upon to supply communications to many new and important centres of development. Within the past few years, wide reaches of the Canadian northland have been spanned by microwave and tropospheric scatter systems, to link such areas as the Quebec-Labrador mining region and Frobisher Bay, on Baffin Island, with the metropolitan centres to the south.

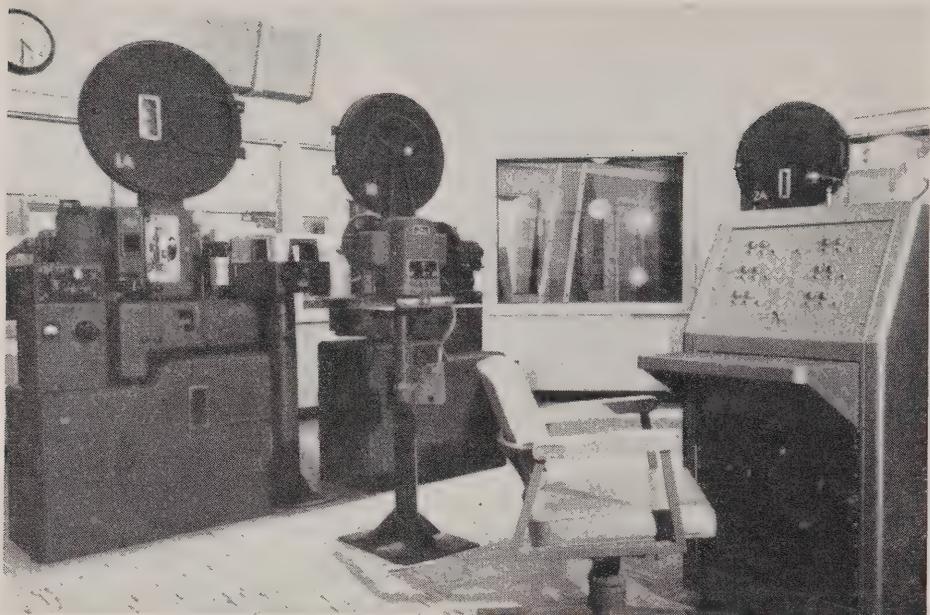
About 85 p.c. of all telephones in Canada are now dial operated and equipped for automatic completion of local calls. Customer dialing of long distance calls—Direct Distance Dialing—is now widely available. Montreal, Toronto, Windsor, London, St. Thomas, Guelph, Cornwall and Valleyfield, and a large number of exchanges near these centres, can now dial direct over large areas of the continent. A long-range international plan, developed by the telephone companies of Canada and the United States, will eventually allow most telephone users on the North American continent to dial long distance calls direct.



Special services for "sidewalk superintendents" include a closed-circuit TV on the roof of a skyscraper under construc-



tion giving street-level viewers a "peek-program" of construction progress, and a telephone which describes, through a recording, all the latest construction details. Both are used on the site of a 34-storey, \$30,000,000 building being erected in Montreal.



The telecine room with projectors, 35mm colour camera and control console in the studios of Canada's first toll-TV company. Six thousand Toronto suburbanites subscribe to this service which brings them a choice of movie programs, in black and white or colour, uninterrupted by commercials, at a set price which is paid into a coinbox in the subscriber's home. In Sault Ste. Marie a pay-later TV plan is being installed whereby time used is recorded on a meter and the subscriber pays every two months.

The world's longest single microwave radio relay network, which spans Canada from coast to coast, was completed by the Trans-Canada Telephone System in 1958 and has already become an integral part of the nation's communications system. Capable in its ultimate form of carrying more than 2,400 long distance conversations and two television programs at the same time, the facilities have already been expanded to enable telephone companies throughout Canada to keep abreast of the increased demand for their long distance services. The circuit-carrying capacity of the original system has been increased and branch systems have been added to extend the system's range for both telephone and television purposes.

Numerous flexible services are provided by Canadian telephone companies for business and industry. Special conference circuits can be quickly arranged. Direct lines between plants, warehouses, retail outlets and many other business and industrial locations allow rapid exchange and processing of information in various forms. A new Dataphone service, which will permit business machines to "talk" to each other at a distance over ordinary telephone lines, is planned for the near future by the Trans-Canada Telephone System. Masses of data in various forms can be transmitted rapidly and accurately with no more formality than that involved in placing a long distance call. Telephoto and facsimile of material in graphic forms provide exact reproduction at a

Even the telephone booth has a wonderland touch at Lafontaine Park in Montreal.

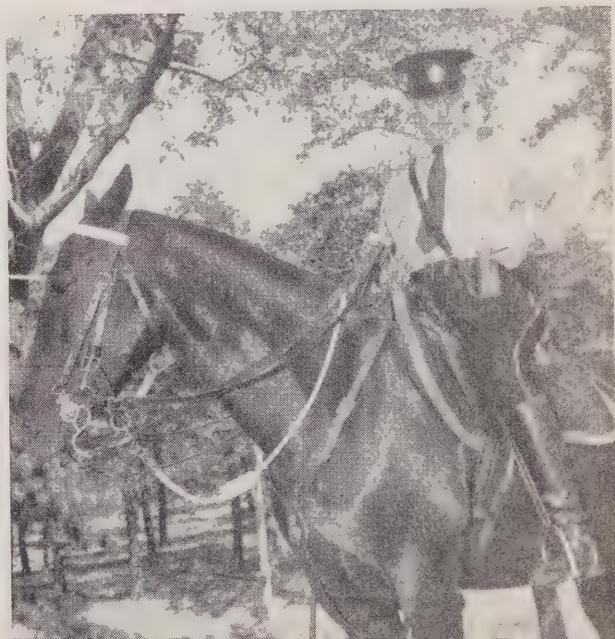


distance. Radio installations link the traveller with the regular telephone network, giving mobile service to such users as highway departments, trucking and construction firms, fire and ambulance services, police departments and oil pipeline companies.

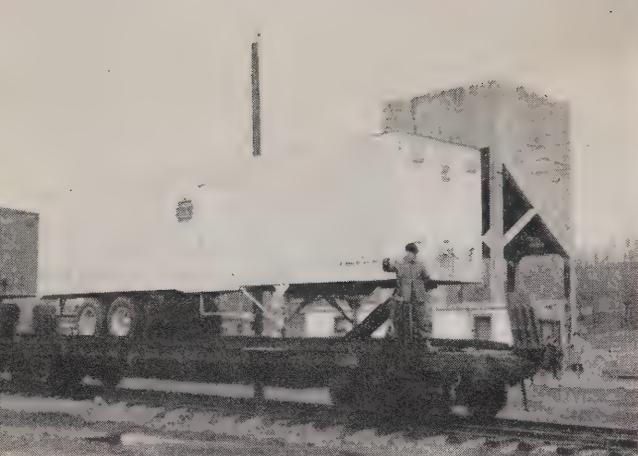
Nation-wide teletype and leased-wire telegraph services are available through the facilities of the member companies of the Trans-Canada Telephone System. The two major railways provide similar services as well as message telegraph services throughout Canada.

The Canadian Overseas Telecommunication Corporation, a Crown agency, is responsible for most overseas communications. Working in conjunction with other international telephone agencies, COTC maintains channels of communication to a number of European countries by way of undersea cable and shortwave radio. The world's first transatlantic telephone cable, completed in 1956, which COTC shares with British and United States telephone systems, will be supplemented in 1961 by a Canadian-British cable, the initial step in a long-term plan to bring about a world-wide Commonwealth cable system. At present, transpacific telephone traffic is handled through a radio link between Vancouver, Australia and Japan; a cable system is being planned.

Ship-to-shore communication on the East Coast, the St. Lawrence River and the Great Lakes is handled by the Federal Government. On the Pacific Coast the North-West Telephone Company operates one of the most extensive radio telephone networks in the world. The radio beams of its northern stations reach out to the Arctic Circle.



Toronto is increasing its force of mounted police for patrolling, crowd handling, traffic control and stake-outs because they can now be equipped with portable two-way radios. The speaker is attached to the policeman's shoulder; the receiver to his belt.



In the densely populated areas of Canada, mail by piggy-back was inaugurated in October, 1960. A trailer of mail is carried by train to its destination, where it is hooked up to a tractor for delivery at the Post Office.



In the sparsely settled areas, the Royal Mail goes by truck. This tractor-trailer operates the longest mail route in Canada—900 miles up and down the Alaska Highway between Dawson Creek, B.C. and Whitehorse, Y. T.



Postal Service

The Canada Post Office conducts a \$193,000,000 business which is constantly expanding. In 1960 4,000,000,000 pieces of mail were handled—an increase of nearly 200,000,000 over 1959—and more than 30,000,000 parcels were delivered to their destinations. To accomplish this tremendous task, 100,000,000 land miles were travelled by letter carrier, railway, highway and other services, and 10,000,000 ton-miles by domestic airlines.

To maintain prompt, efficient and economical service, the Post Office is accelerating its program to streamline its operations both at headquarters and in the field. As part of this program the pilot installation of an electronic letter sorter is being tested in Montreal. This machine is designed to mechanize a time-consuming process requiring individual handling of each letter and to relieve sorters of the burden of memorizing distribution knowledge. Plans are also being made to mechanize other basic operations, such as grading and facing-up letters.



Another innovation is an electronic calculator. Electronic data processing is being studied and simplified accounting procedures have been introduced to facilitate financial operations. In 1960, the Comptroller's Branch was established to centralize all purchasing and internal accounting.

In the field, mail handling procedures are under constant review. Improved equipment is being installed in the new post office buildings using various combinations of hoists, conveyors and chutes to carry mail rapidly



A new snorkel type plastic letter box for curbside mailing was introduced in 1960 on an experimental basis with a view to reducing maintenance time and cost.

and safely. To expedite mail transportation, 341 highway mail services have recently been put into operation. Many of these have replaced railway facilities no longer available because of changes in schedule and equipment by the railway companies. However, a considerable proportion of the mail is still handled by the railways, which operated 382 baggage car services and 78 railway post offices in 1960.

Some 700,000 householders are served by rural routes and 6,273 group mail box units throughout the country—the latter having increased by 30 p.c. throughout the year.

Letter carrier delivery was inaugurated at five communities during the fiscal year 1959-60, and more than 300 new letter carrier walks were added in localities already receiving this service. Several new postal stations and letter carrier depots were established with a view to providing better facilities to expanding areas of certain cities.

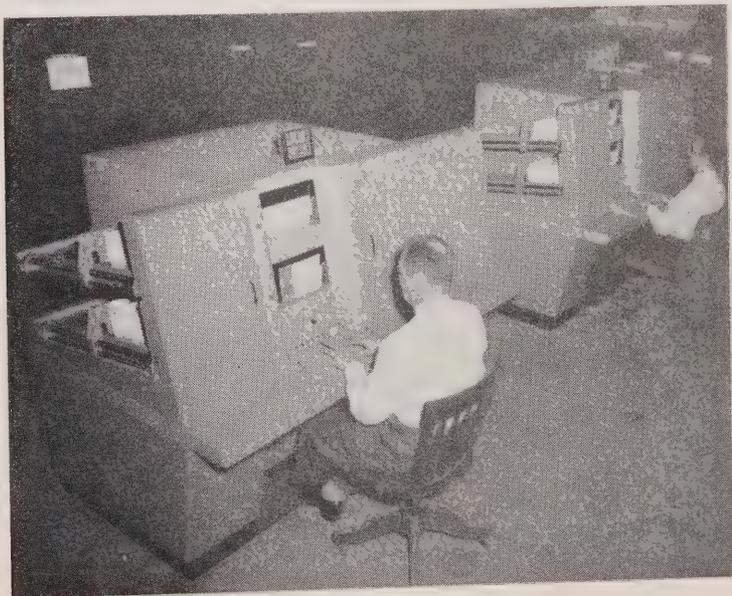
The mailmobile, introduced on an experimental basis in Vancouver in 1959 for door-to-door mail delivery in suburban areas, proved practical and efficient. As a result, 50 additional vehicles were ordered for use at points from coast to coast to determine their dependability under varying climatic conditions.

More than 2,000 mechanical stamp vending machines are now available for the convenience of the public. These machines give full face value of stamps and enable patrons to purchase them at any time. On an experimental basis, installations of electrically operated stamp vending machines are being made.

In addition to its responsibility for handling the mail, the Post Office provides other services for the public, such as money order and savings bank facilities.

In the year ending March 31, 1960, money orders to the total value of more than \$860,000,000 were issued in Canada, an increase of $2\frac{1}{4}$ p.c. over the previous year. Money orders issued for payment in foreign countries increased by 5 p.c.

Savings bank facilities are available at almost 1,500 of the 11,497 post offices in Canada. A balance of more than \$29,000,000 was on deposit in some 302,000 accounts at the close of the fiscal year.



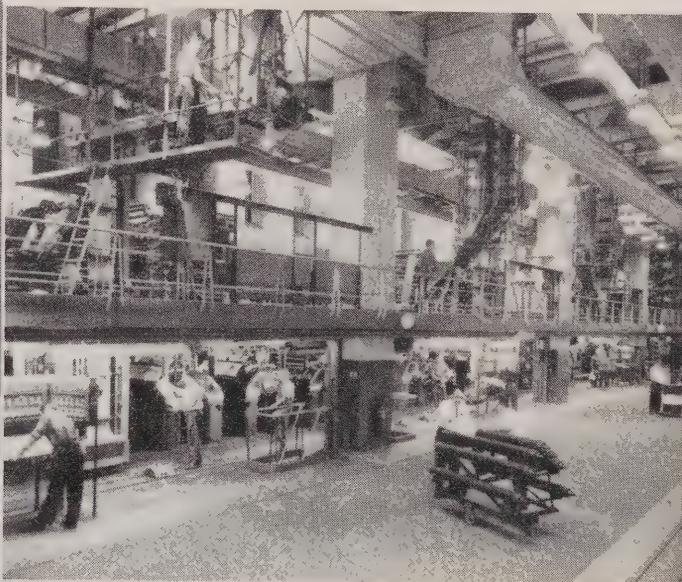
Two operators at the letter coding desks of the Post Office's new electronic sorting machine.

The Press

For centuries, since the invention of movable type, the printed word has been the second most widely used medium of exchanging ideas and imparting information—second only to human speech. In Canada, newspapers, magazines and books consumed \$62,400,000 worth of newsprint and \$27,000,000 worth of book paper in 1959. The publishing and printing industries employed nearly 31,000 people whose salaries and wages amounted to \$128,000,000.

Canadian newspapers are not, generally speaking, politically partisan. Almost all are independent and pride themselves on providing objective, factual reporting. Even the views expressed on the editorial pages are, in the main, based on the decisions of the editorial staff rather than on rigid adherence to a superimposed policy. Most of the daily papers have one or more columnists who are free to express their personal views in their own columns and letters to the editors expressing the most individualistic reactions to public affairs are printed with no other censorship than that imposed by the laws of libel.

Every publishing day, more than 4,000,000 daily newspapers are printed by 113 publishers, about three-quarters of them in the afternoon and the remainder in the morning. Of these 113 newspapers, 95 are in English, 12 in French and the rest in other languages. Twelve of them have circulations in excess of 100,000 and account for more than half of all papers sold. The dailies are published in urban areas and have some distribution in rural areas, but the latter depend for local news on weekly or monthly newspapers that cater to their particular interests. Among these are 91 foreign language papers published in 29 languages to serve residents of Canada whose mother tongue is other than English or French.



The new seven-storey building of the Montreal Star, opened in 1960, is very different from the little rented store where the first issue was printed in 1869. From street level passers-by can watch the 25 modern presses—one of the largest press lines in Canada—whirl out upwards of 260,000 papers an hour.

Magazines and periodicals also enjoy a large circulation. In 1959, 766 periodicals, ranging widely in topic from arts, sports and religion to construction, had a circulation in excess of 17,842,000.

Behind the newspapers lie two great news-gathering organizations, the Canadian Press and the British United Press. The CP, a co-operative venture formed in 1917, is owned and operated by the Canadian newspapers. It collects and delivers news and photographs of interest to newspapers and radio stations throughout the nation, and transmits items of world-wide interest through reciprocal arrangements with Reuters, the British agency, and the Associated Press, the United States co-operative. Attaining its more modern structure in 1923, it is, in practice, a venture for exchanging news among its 100 daily newspaper members, and the costs are shared by almost all dailies in relation to the populations of the cities served.

One of the newest additions to Canada's foreign-language weekly press is "Egységes Magyarorság", or "United Hungarians", which began publication late in 1959.



The other service, British United Press, is a limited company in Canada and maintains a close association with the United Press International, of which it is an affiliate. From its headquarters in Montreal and its 12 Canadian bureaus, it serves directly North America, South America, Europe and Australia with news from Canada as well as 185 subscribers including 58 private broadcasting stations in Canada. Agence France Presse maintains offices in Montreal and Ottawa and certain foreign newspapers have agencies in Ottawa to interpret Canadian news for their readers.

Daily newspapers alone contribute about 73 p.c. of the revenue received from Canadian periodical publications, totalling about \$284,000,000 yearly, of which amount \$208,000,000 is realized from advertising and \$76,000,000 from sales. Printed and bound books were produced to the value of \$40,000,000 although less than half of that was classed as reading matter—the remainder being catalogues and other advertising material. Recorded imports of books and other printed matter greatly exceeded exports, the former amounting to \$96,881,000 in 1959, and the latter \$4,891,000.



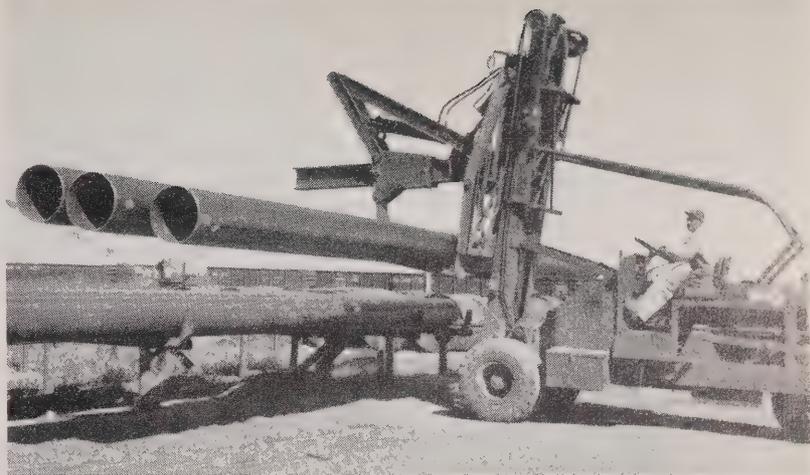
Whitehorse, the capital city of the Yukon Territory since 1951, is experiencing a rapid urban growth. Its population has increased by 40 p.c. in the last five years and the Riverdale residential subdivision, opened three years ago, now contains 114 houses ranging in cost between \$10,000 and \$40,000. Major buildings include the \$4,000,000 Whitehorse Hospital and the \$2,000,000 Territorial Government Building. A large auditorium, an arena and a city garage are recent additions. The city has an R.C.A.F. base and a busy commercial airport.

Investment

Investments are expenditures made on capital goods, which, by definition, are not bought for current consumption; they are factories, stores, hospitals, mines, office buildings, railways, power installations, pipelines, telephone lines and the tools, machinery and equipment used in either producing goods or providing services for future consumption. The buyers of capital goods are individuals when they buy new houses, businessmen when they acquire new plant and equipment, and governments when they make outlays on roads, canals, office buildings, waterworks.

The size and quality of the nation's stock of capital goods determines to a large extent its standard of living. It is a governing factor in labour productivity. Maintaining the stock of capital goods contributes to maintenance of standard of living and there is hope of improving it when additions to the stock of capital goods are made or when modernization takes place.

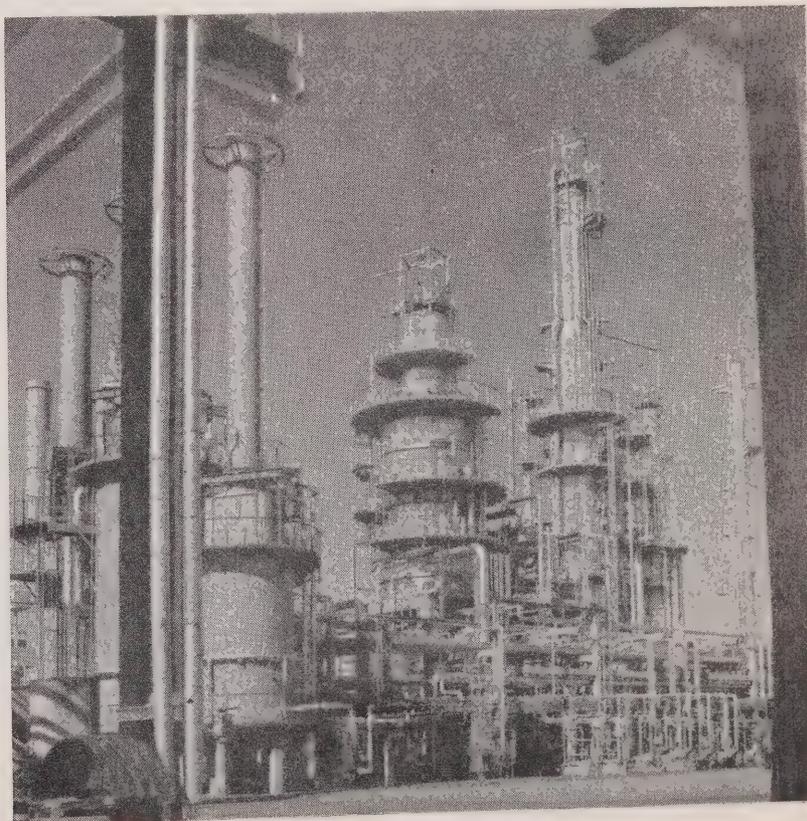
Manufacturing is assuming increasing importance in the provinces of Alberta and Saskatchewan. The oil industry has produced a demand for steel pipes and plants have been opened in both provinces to supply the demand. At this steel pipe plant near Regina, a specialized loader moves three 52-foot pipes into storage position.

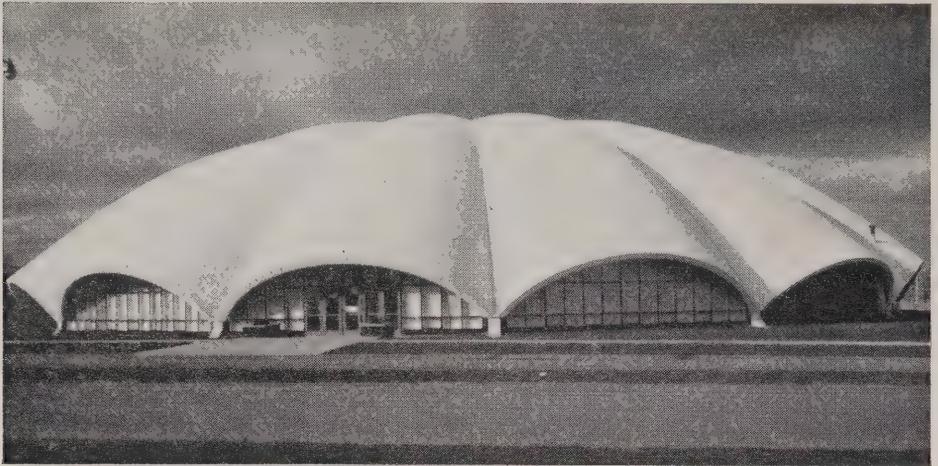


The rate of capital spending indicates the extent to which an economy is providing for the future or is becoming industrialized; it also reflects changes in the opinion of the business community as to future prospects and of governments as to future demands for their services.

Beyond their influence on the future of the economy, capital expenditure programs have a tremendous impact on current levels of employment and income. Workers in the construction industry are kept employed almost exclusively on the construction of new facilities while employment in manufacturing industries is influenced to a large extent by the demand for building materials and capital machinery and equipment. In order to produce the latter, further demands are made on the economy. Therefore, the devotion of Canadian resources and manpower to the expansion of the country's stock of capital goods provides employment and income, both directly and indirectly to a large segment of the Canadian population.

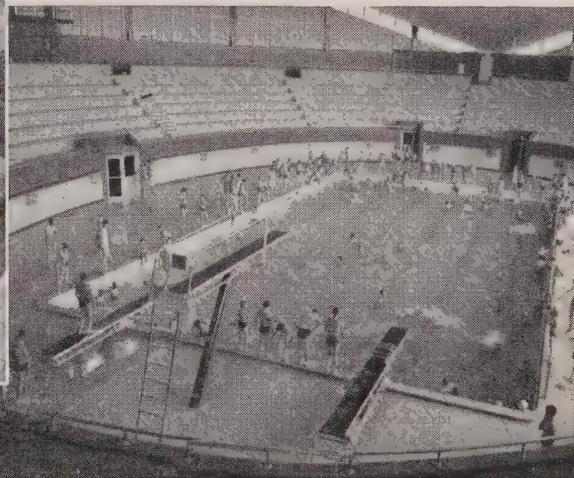
This new oil refinery at Calgary, Alberta, covers 340 acres of land and employs 255 men and women. The \$14,000,000 construction program recently completed has replaced most of the old refinery with new units which can produce 14,700 barrels daily.





The new Don Mills Curling Club in Toronto features an unusual but practical type of construction.

Total capital outlays in Canada in 1960 amounted to \$8,200,000,000 a reduction of 2.6 p.c. from the 1959 level. Expenditures on new construction at \$5,487,000,000 were 3.9 p.c. lower, while purchases of new machinery and equipment totalling \$2,713,000,000 were unchanged from the previous year's level. Total capital expenditures kept increasing throughout most of the decade since 1950 and reached a record level in 1957. Although the economy has experienced a downturn of capital expenditures since the all-time peak of 1957, they still constitute a substantial portion of the gross national product which is used to define the aggregate of a nation's output. From 1957 to 1958 a shift from business spending to social capital (housing, institutions and government installations) was clearly noticeable. This change in composition, to a lesser degree, however, was also noticed from 1959 to 1960 in spite of the important reduction in expenditures on housing. Early indications show that this trend will continue during 1961.



The first two buildings—a large dome-shaped gymnasium and an Olympic-size swimming pool—have been completed in the gigantic Montreal Sports Centre project. The gymnasium is used as a police training school by day and is operated for the public in off-hours. Future plans call for several large outdoor swimming pools, a baseball stadium, an open-air theatre, an administration building with a restaurant and playgrounds.



⤷ Nineteen concrete roof shells, poured on the site, will form the unusual and economical roof on a new super-market.



In a new technique of pre-fabrication, 50x3 foot pre-cast, pre-stressed concrete finned wall sections are hoisted into place with the help of a giant crane. The five-ton sections will completely encase the building and will be inter-spaced with windows, for which they will act as sun screens.



The trend in capital spending in the past decade is shown in the following table:

Private and Public Capital Expenditures, 1950-60

NOTE: 1958 and 1959 figures are actual expenditures, 1960 figures are preliminary estimates.

Year	Construction	Machinery and Equipment	Total	Percentage of Gross National Product
	\$'000,000	\$'000,000	\$'000,000	
1950.....	2,453	1,483	3,936	21.9
1951.....	2,871	1,868	4,739	22.4
1952.....	3,434	2,057	5,491	22.9
1953.....	3,756	2,220	5,976	23.9
1954.....	3,737	1,984	5,721	23.0
1955.....	4,169	2,075	6,244	23.0
1956.....	5,273	2,761	8,034	26.3
1957.....	5,784	2,933	8,717	27.4
1958.....	5,830	2,534	8,364	25.7
1959.....	5,709	2,708	8,417	24.3
1960.....	5,487	2,713	8,200	—

An examination of the background of the capital expenditure program carried out in 1960 reveals a substantial decline in outlays for housing from 1959. This, coupled with a fair reduction in expenditures on utilities, was mainly responsible for the overall decrease in capital investment. The decrease was however partially offset by gains principally in the resource-based industries, the manufacturing industries, institutions and government departments.

Private and Public Capital Expenditures, by Sectors, 1958-60¹

Type of Enterprise	Construction	Machinery and Equipment	Total
	\$'000,000	\$'000,000	\$'000,000
Agriculture and Fishing.....1958	101	364	465
.....1959	109	430	539
.....1960	107	441	548
Forestry.....1958	19	14	33
.....1959	21	27	48
.....1960	25	27	52
Mining, Quarrying and Oil Wells.....1958	242	100	342
.....1959	250	92	342
.....1960	298	84	382
Manufacturing.....1958	398	697	1,095
.....1959	374	770	1,144
.....1960	350	842	1,192
Utilities.....1958	1,405	748	2,153
.....1959	1,118	724	1,842
.....1960	1,110	649	1,759
Construction Industry.....1958	16	141	157
.....1959	16	129	145
.....1960	16	121	137
Housing.....1958	1,782	—	1,782
.....1959	1,752	—	1,752
.....1960	1,489	—	1,489
Trade—Wholesale and Retail.....1958	195	161	356
.....1959	167	196	363
.....1960	158	190	348
Finance, Insurance and Real Estate.....1958	150	30	180
.....1959	225	42	267
.....1960	201	49	250
Commercial Services.....1958	51	118	169
.....1959	70	133	203
.....1960	58	132	190
Institutional Services.....1958	457	57	514
.....1959	479	57	536
.....1960	508	68	576
Government Departments.....1958	1,014	104	1,118
.....1959	1,128	108	1,236
.....1960	1,167	110	1,277
Totals.....1958	5,830	2,534	8,364
.....1959	5,709	2,708	8,417
.....1960	5,487	2,713	8,200

¹ 1958 and 1959 figures are actual expenditures, 1960 figures are preliminary estimates.

The steep decline in residential construction in 1960 is partly due to a restricted supply of mortgage funds in the first part of the year, particularly in lending under the National Housing Act. Later in the year the supply of funds increased but general market conditions became the limiting factor in house building activity.

Capital expenditures in the primary industries were higher in 1960 than in the previous year. The figures for the agricultural sector reflect continued

mechanization of farm activities. Higher capital outlays in the Quebec-Labrador iron ore projects and in petroleum and gas mining in the western provinces were mainly responsible for the increase in the mining industry. There was a reduction in the construction of new manufacturing plants; on the other hand, manufacturers increased their purchases of machinery and equipment over the previous year.

The decline in capital expenditures in utilities in 1960 reflected the completion of certain large projects, such as natural gas pipelines, electric power installations and the St. Lawrence Seaway. However, initial expenditures were made late in the year on the Canadian portion of a new gas pipeline built for the purpose of exporting gas to the United States and referred to as the Alberta-California project. Substantial outlays are expected to be made on the latter in 1961. The harnessing of the Manicouagan River in northern Quebec was also started in 1960 and the construction of the hydro power facilities is expected to take many years and should involve large capital expenditures.

In recent years, there has been a large amount of spending in the erection of office buildings and shopping centres and the trend was continued in 1960. The improved financial situation of hospitals and universities has permitted greater expansion of their facilities and outlays in this sector reached an all-time record level in 1960.

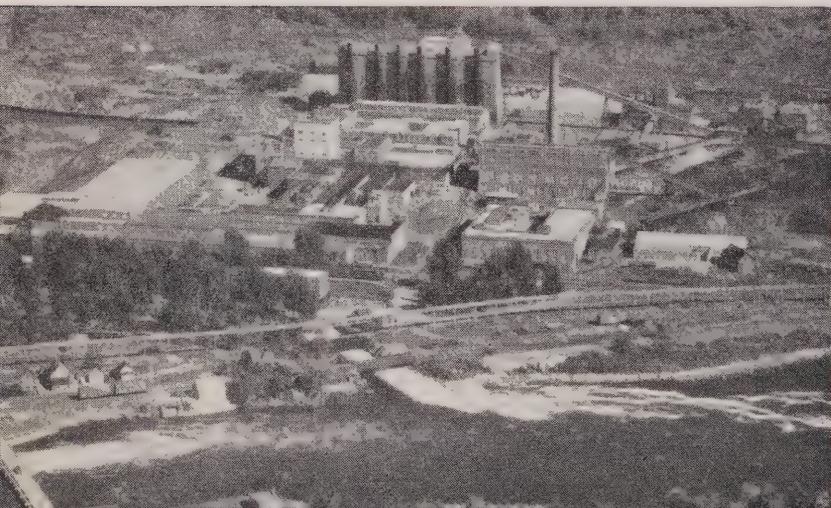
The new McMahon Stadium in Calgary, Alberta, is claimed to be the largest in Western Canada.



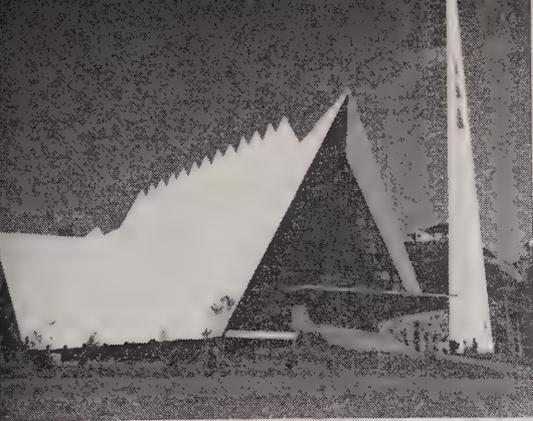
Private and Public Capital Expenditures, by Province, 1958-60¹

Province		Construction	Machinery and Equipment	Total
		\$'000,000	\$'000,000	\$'000,000
Newfoundland.....	1958	80	27	107
	1959	84	31	115
	1960	118	32	150
Prince Edward Island.....	1958	16	14	30
	1959	25	12	37
	1960	23	11	34
Nova Scotia.....	1958	120	65	185
	1959	161	65	226
	1960	158	65	223
New Brunswick.....	1958	132	50	182
	1959	137	66	203
	1960	127	60	187
Quebec.....	1958	1,437	617	2,054
	1959	1,460	634	2,094
	1960	1,313	647	1,960
Ontario.....	1958	2,144	960	3,104
	1959	1,904	996	2,900
	1960	1,851	985	2,836
Manitoba.....	1958	275	134	409
	1959	315	169	484
	1960	337	176	513
Saskatchewan.....	1958	307	170	477
	1959	273	194	467
	1960	289	175	464
Alberta.....	1958	655	235	890
	1959	676	271	947
	1960	678	278	956
British Columbia ²	1958	663	262	925
	1959	674	270	944
	1960	593	284	877
Canada.....	1958	5,829	2,534	8,363
	1959	5,709	2,708	8,417
	1960	5,487	2,713	8,200

¹ 1958 and 1959 figures are actual expenditures, 1960 figures are preliminary estimates. Includes Northwest Territories and Yukon.



A paper mill in northern Quebec. Pulp and paper stands first among all industries in capital invested as well as in net value of shipments, in exports and in total wages paid.



The Church of St. Marc,
at Bagotville, Que.



The United Church of Christ
in Kitimat, B.C., was
completely
since 1951 and
pected to grow
a population of
50,000.



The Church of Our Lady of
the Arctic, Inuvik, N.W.T.,
designed to resemble an
igloo. The aluminum
shingles on the domed
roof take on the appear-
ance of ice when they
reflect sunshine. The dome
is topped by a circular
"lantern" with 36 windows.
The lower walls are
painted to simulate snow-
blocks.



Monastery of St. Albert the
Great, Montreal.

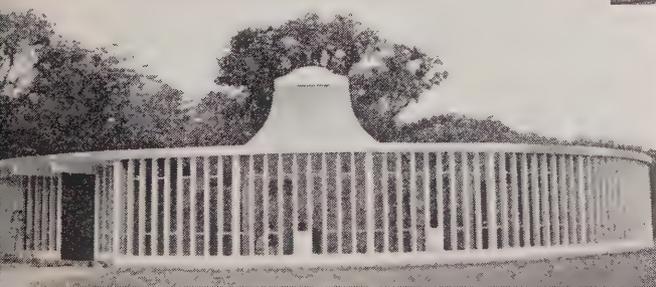


The school wing of Adath Israel Syna-
gogue, Toronto.

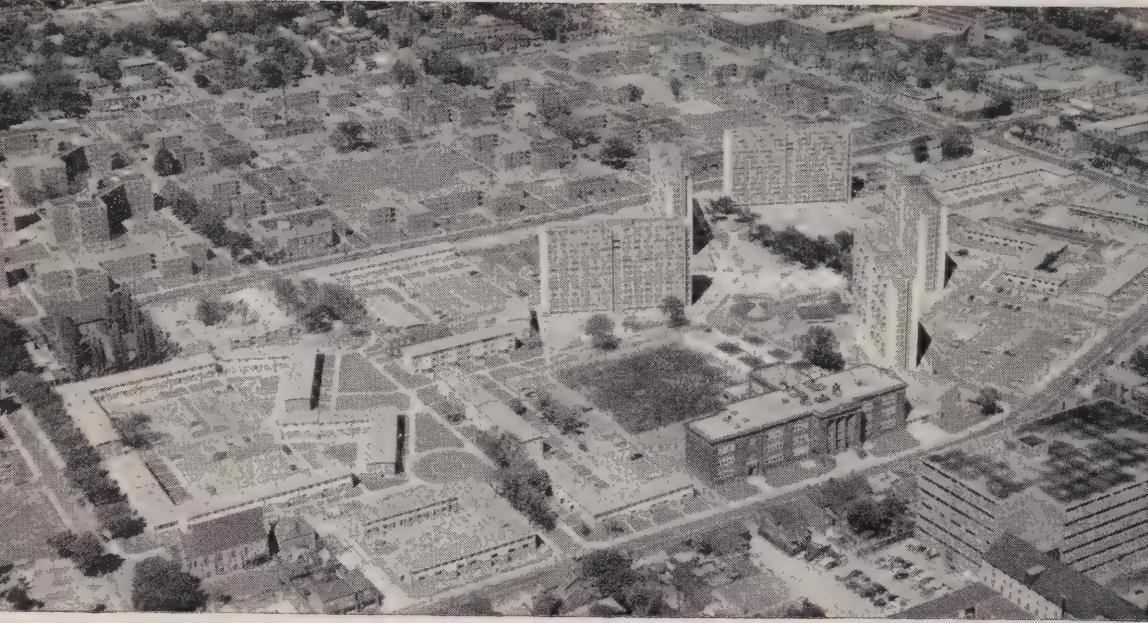
Church architecture has taken a long step from the conventional forms that have been used with little change for centuries, as is evidenced by these seven examples of recent construction. Many church interiors are equally revolutionary.



The world's only teepee-shaped cath-
edral, the Church of Our Lady of the
Sorrows, built for the Indian congrega-
tion at the Hobbema Indian Reserve in
Alberta.



Bloor Dale United Church, Toronto.



An enormous low-rent housing project financed by federal-provincial funds on a 75-25 ratio. Such projects may be operated on a full recovery basis, or they may be subsidized and use a sliding scale of rents related to size of family and income. Up to January, 1961, some 7,300 low-rental dwelling units had been completed.

Housing

In the past four years, 500,000 new homes have been built in Canada, housing 2,000,000 persons, or one-ninth the total population. Of these new houses 225,000 were constructed with the assistance of the National Housing Act and, of this total, nearly half received direct loans from Central Mortgage and Housing Corporation. Most of the NHA lending was directed primarily toward the lower-income range of borrowers, while conventional lending mainly accommodated those in higher income brackets.

Following this period of intense activity, there was a temporary easing of demand in 1960. Three main factors contributed to the slight drop in house construction during the period. The rate of family formation was not as great as in previous years; however, by the mid-1960's, a large segment of Canada's population will be reaching maturity and a corresponding rise in demand should be experienced. During the year incomes levelled off and this, coupled with the highest interest rates in post-war years, had a moderating influence on the housing market.

New housing starts in 1960 were 108,858, compared with 141,345 for 1959, while units completed totalled 123,757 compared with 145,671 in 1959.

Parliament, in the latter part of 1960, passed amendments to the National Housing Act which should enable more Canadians, especially in the lower-income categories, to acquire a home. The amendments have the effect of

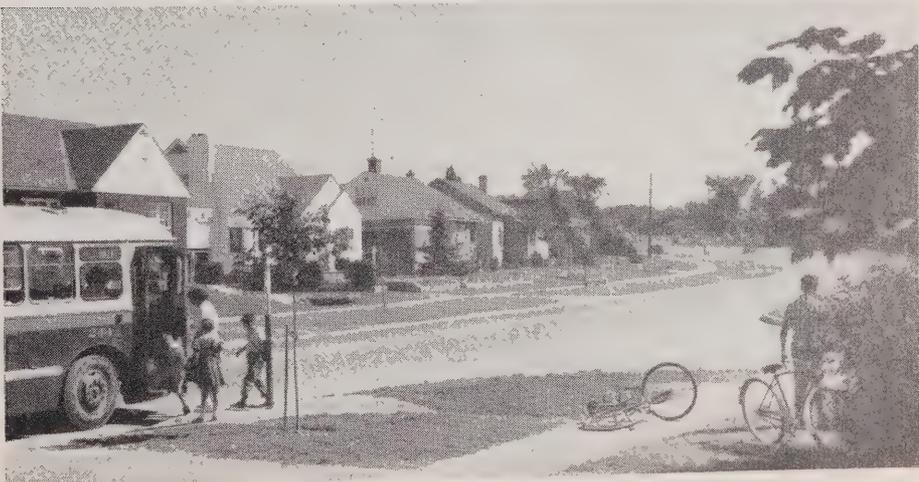
increasing the amount of an insured loan available, reducing down payments and at the same time, lengthening the repayment term, where necessary, to 35 years. Direct lending by CMHC was extended to include any eligible applicant, in any area, who had been refused a loan by a bank or other approved lender.

During 1960, limited-dividend loans to provide rental housing for low-income families and for elderly persons were below the corresponding period for 1959. In the past year, \$3,434,823 were loaned to provide 661 units for elderly persons compared to \$5,811,606 and 969 units in 1959. In the same periods \$16,046,954 were loaned for 1,918 units of low-income accommodation against \$29,302,862 for 3,463 units the preceding year.

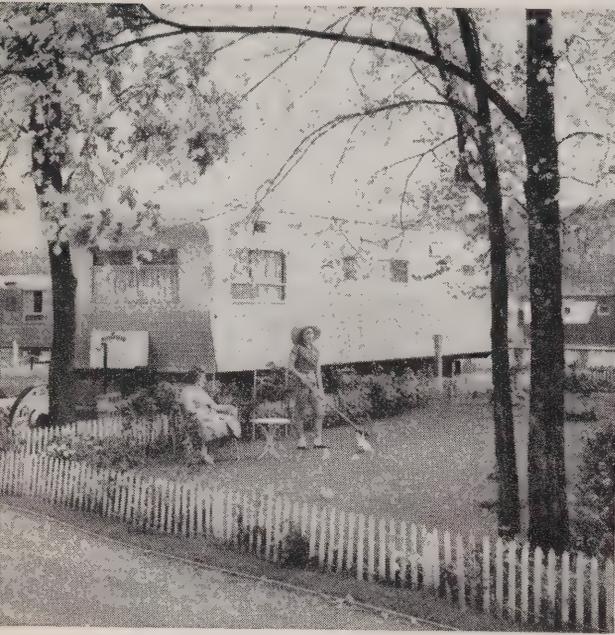
Other new amendments incorporated three new provisions into the Act. The pollution of soil and water in Canada is a problem of growing concern—less than one-sixth of urban municipalities have adequate sewage treatment plants in operation. CMHC is now enabled to make loans up to a total amount of \$100,000,000 to assist in the construction of municipal sewage treatment projects, approved by provincial governments, which result in the control of water and soil pollution. These loans are repayable over a period not exceeding 50 years, and are restricted to two-thirds of the cost of the project. Where a sewage project is completed to the satisfaction of Central Mortgage and Housing Corporation on or before March 31, 1963, the Corporation may forgive payment of 25 p.c. of the principal amount of the loan and accrued interest. If the project is under construction but not completed by March 31, 1963, 25 p.c. of the principal and accrued interest may be forgiven as warrantable by the amount of construction progress to that time.

Under the new amendments CMHC is also authorized to make loans to universities for students' residences. The student population increased from 63,500 in 1952 to about 100,000 in 1960, and with 160,000 forecast by 1966, the need for accommodation is increasingly important. Loans may be granted for up to 90 p.c. of the cost of the project, for a period of not more than 50 years, at the current interest rate.

This type of suburban development may be found in almost any Canadian city.



Kitchens are equipped with full size appliances. Mobile homes are sold completely furnished at prices ranging from \$5,500 to \$8,000. ↗



Thousands of Canadians live in mobile homes. A typical trailer park is landscaped throughout, has paved roads, street lighting and all services underground (sewers, water, hydro and telephone and TV hook-ups). They are lived in by transient construction workers, pipeline crews, engineers, geologists, prospectors, salesmen, telephone crews, entertainers, etc., and also by armed forces personnel and mine and smelter workers operating in areas where housing is inadequate.

Because many buildings in redevelopment areas might be rehabilitated to provide public housing accommodation, the provisions for federal-provincial housing under NHA were broadened to include the purchase and conversion of existing buildings to housing purposes.

Increased aid is also available under the home improvement section of the Act. Loans are now available, in addition to owner-occupied houses, to owners of rental properties, including apartment buildings. This provides the opportunity for an extensive program of repair and improvement of the 1,500,000 rental housing units.

Further efforts were made in 1960 to promote research and to encourage the development of better housing. An additional grant of \$2,000 was made to the Committee of Inquiry into the Design of the Residential Environment, set up by the Royal Architectural Institute of Canada, which was sponsored by CMHC in 1959 with a \$30,000 grant. The Committee submitted its report in 1960 and a continuing sub-committee was established to keep abreast of developments and make further recommendations.

The Canadian Housing Design Council received financial support from CMHC to continue its program of improving house design. Five travelling scholarships in architecture were established and awarded to students specializing in the design and construction of houses, and several architectural competitions were conducted in the fields of house design and house grouping. The Canadian Conference of University Schools of Architecture received further assistance for the development of lecture tours designed to promote wider understanding of the functions and scope of architecture.

One of eight houses chosen by the Canadian Housing Design Council to receive awards in western Canada. The Canadian Housing Design Council presents regional awards annually to encourage the improvement of home design by directing attention to the best houses being built.



Continued financial support was given to the Community Planning Association of Canada and several fellowships were awarded to assist students in the fields of housing, planning and urban development. Financial assistance was also given to the four Canadian universities offering planning courses.

In the field of development and renewal, the provinces of Manitoba, Prince Edward Island and Nova Scotia received grants from CMHC for studies of housing conditions and the need for redevelopment. With financial help from CMHC, a number of municipalities also initiated urban redevelopment studies in 1960 and others completed their studies and began redevelopment. By the end of the year nearly all the major cities in Canada had undertaken urban redevelopment studies, assisted by financial grants, and in many of them reports had been submitted and redevelopment commenced, with CMHC sharing the costs.

Research grants were also made in 1960 for studies of economic problems of planning and urban growth; methods of sewage disposal; performance and development of new materials; and methods of equipment.



The suburban shopping centre is becoming increasingly familiar in new housing developments. The Red River Co-operative Shopping Centre in Winnipeg, Manitoba, was the first of its kind, but others are now under construction in Moose Jaw and Prince Albert, Saskatchewan.



A skilled steelmaker uses an oxygen torch to strip the scale off a forging.

Canadians at Work

Development in the field of labour has been assisted by legislation at both federal and provincial levels. The right of workers to belong to labour unions of their own choosing is protected by law and laws have been enacted to set minimum standards for hours of work, wages and other conditions of employment. Most Canadian workers, however, enjoy conditions of employment far better than those required by law.

The Labour Force

Since the turn of the century Canada's industrial structure has changed greatly. In 1900 primary industry absorbed about 44 p.c. of all employment, with agriculture alone accounting for about 40 p.c. of the total. Although the output of these industries has greatly expanded through increased mechanization and marked advances in production techniques, only about 14 p.c. of total employment is now provided by primary industry.

As the labour force has more than tripled in the past three decades, the size and importance of manufacturing, commerce, and service industries have grown substantially. Changes in the past 15 years have been particularly striking. After World War II the goods-producing industries (agriculture, forestry, mining, manufacturing and construction) gave employment to about 2,800,000 workers, or almost 60 p.c. of all employed persons. The

remaining 40 p.c. came from service-producing industries including trade, finance, transportation, utilities, education, health maintenance and government administration. However, service industries have grown so rapidly within the past 15 years that the relative importance of the two groups has been reversed.

Industrial Distribution of Employment 1900 and 1960

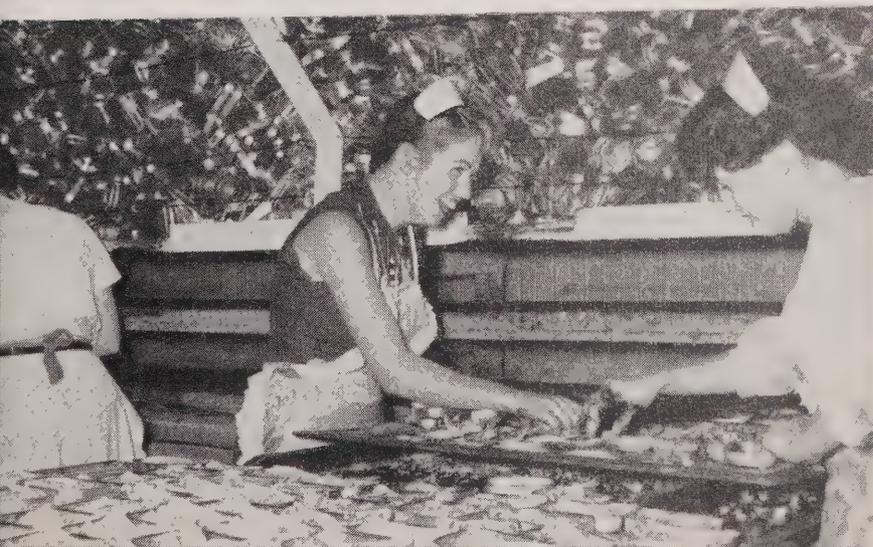
(in per cent)

	1900		1960	
Goods-Producing Industries.....		72		46
Agriculture.....	40		11	
Other Primary Industries.....	5		3	
Manufacturing.....	15		25	
Construction.....	12		7	
Service-Producing Industries.....		28		54
Transportation and other Utilities.....	5		9	
Trade, Finance, Insurance and Real Estate.....	9		20	
Service.....	14		25	
TOTAL—in percentage.....		100		100
—in persons.....		1,800,000*		6,000,000*

* Comparisons between 1900 and 1960 are approximate, but substantially accurate. They are based upon population census data in 1901 and labour force survey data in 1960.

Associated with the relative growth of secondary industry has been the expansion of employment for women. In 1900 only about one of every eight women of working age was in the labour force compared to one in four today. While manufacturing provides many jobs for women, services related to government, education, and health have seen the most dramatic increases in the employment of women.

Coincidental with increasing numbers of women in industry, there has been a substantial shift of operations such as food processing, cleaning and laundering from the home to specialized business establishments. There has also been much greater use of household appliances which reduce the housewife's work. It is estimated that in 1900 less than 5 p.c. of women in the labour force were married, while by 1960 this had risen to almost 45 p.c.



The proportion of women in the labour force averages 23.5 p.c. and ranges from a high of 26.2 p.c. in Prince Edward Island to a low of 11.4 p.c. in Newfoundland. The average weekly wage for women in manufacturing in 1959 was \$43.36; for men, \$79.20.

Occupational Distribution of Persons with Jobs, by Sex, Week Ended Oct. 15, 1960

(Thousands of persons 14 years of age or over)

Occupation	All Persons with Jobs			Paid Workers		
	Male	Female	Both Sexes	Male	Female	Both Sexes
Managerial.....	472	63	535	223	26	249
Professional.....	331	270	601	293	262	555
Clerical.....	288	480	768	288	471	759
Transportation.....	390	1	395	364	1	368
Communication.....	49	34	83	49	34	83
Commercial.....	269	179	448	266	158	424
Financial.....	51	1	57	36	1	40
Service.....	259	360	619	241	329	570
Agricultural.....	645	52	697	113	1	121
Fishing, logging and trapping.....	105	1	105	86	1	86
Mining.....	54	1	54	53	1	53
Manufacturing and mechanical ²	872	197	1,069	838	189	1,027
Construction.....	348	1	349	303	1	304
Labourers and unskilled workers (not agricultural, fishing, logging or mining).....	337	14	351	335	14	349
Totals.....	4,470	1,661	6,131	3,488	1,500	4,988

¹ Fewer than 10,000. ² Includes stationary enginemen and occupations associated with electric power production.

Almost all types of economic activity carried on in Canada are affected in varying degrees by the weather, and in consequence seasonal variations in employment are fairly general throughout industry. In some industries, such as agriculture and construction, work is considerably reduced in the winter; manufacturing, trade and service, on the other hand, are much less affected. In 1960 employment ranged from a low of about 5,600,000 in March to a high of almost 6,300,000 in August.

Not all workers in industries subject to seasonal reductions in activity remain in the labour market in the off season. In such industries as logging and fishing, for example, many workers traditionally withdraw from the labour force during the more severe winter months. Of recent years, however, seasonal unemployment has represented a serious problem with winter unemployment averaging about 7 p.c. of the labour force over the years 1955-1960.

To combat the problem of winter unemployment the Federal Government since 1954 has provided financial assistance to provincial and municipal governments for certain types of construction and development projects undertaken during the winter months. An extensive campaign has also been undertaken to encourage householders and businesses to undertake repairs and renovations during the slack season for construction workers.

Employment and Earnings, 1960

Although small employment declines occurred in many goods-producing industries, average earnings of Canadian workers continued to advance in 1960, and industrial payroll aggregates were higher in all major industrial sectors. Gains in per capita earnings occurred in all provinces, and the Canada average increased by approximately 3 p.c.

Payroll indexes indicate substantially larger gains in aggregate earnings than in employment during the past decade. In total, payrolls have approximately doubled in this period, while employment has increased slightly less than one-fifth.

Index Numbers of Employment and Payrolls, and Average Weekly Wages and Salaries, by Province and Industry, 1959 and 1960

NOTE.—Figures are for the last pay periods in the 12 months ending October 31, and are computed from monthly returns from industrial establishments usually employing 15 or more persons.

Province and Industry	Index Number (1949 = 100)						Average Weekly Wages and Salaries		
	Employment			Payrolls					
	1959	1960	P.C. Change	1959	1960	P.C. Change	1959	1960	P.C. Change
							\$	\$	
Newfoundland.....	124.2	128.9	+ 3.8	208.8	229.0	+ 9.7	63.43	66.96	+ 5.6
Prince Edward Island.	126.1	128.9	+ 2.2	205.3	216.4	+ 5.4	53.91	54.94	+ 1.9
Nova Scotia.....	95.9	96.3	+ 0.4	152.8	160.5	+ 5.0	59.76	62.36	+ 4.4
New Brunswick.....	101.0	103.1	+ 2.1	160.6	170.3	+ 6.0	60.12	62.27	+ 3.6
Quebec.....	118.1	118.9	+ 0.7	201.3	210.7	+ 4.7	70.01	72.59	+ 3.7
Ontario.....	120.9	119.7	- 1.0	207.4	211.8	+ 2.1	75.89	78.24	+ 3.1
Manitoba.....	111.7	111.3	- 0.4	184.1	188.4	+ 2.3	69.71	71.47	+ 2.5
Saskatchewan.....	130.0	126.6	- 2.6	217.4	218.3	+ 0.4	69.75	71.81	+ 3.0
Alberta.....	154.4	154.0	- 0.3	261.5	268.8	+ 2.8	75.24	77.47	+ 3.0
British Columbia.....	114.7	115.7	+ 0.9	199.6	210.2	+ 5.3	79.39	82.62	+ 4.1
Composite.....	119.3	119.2	- 0.1	203.5	210.4	+ 3.4	72.96	75.42	+ 3.4
Forestry (chiefly logging).....	77.4	84.9	+ 9.7	138.9	157.6	+13.5	71.77	74.22	+ 3.4
Mining.....	122.2	121.3	- 0.7	214.0	219.6	+ 2.6	90.05	93.20	+ 3.5
Manufacturing.....	110.8	110.0	- 0.7	191.4	196.9	+ 2.9	75.26	77.76	+ 3.3
Durable goods.....	115.2	113.8	- 1.2	198.9	203.2	+ 2.2	81.00	83.69	+ 3.3
Non-durable goods..	107.1	106.8	- 0.3	184.0	190.6	+ 3.6	70.02	72.46	+ 3.5
Construction.....	129.5	126.5	- 2.3	237.9	243.4	+ 2.3	75.88	79.88	+ 5.3
Transportation, storage and communication.	114.5	111.8	- 2.4	188.3	190.4	+ 1.1	79.01	81.96	+ 3.7
Public utility operation	138.4	138.1	- 0.2	254.7	265.5	+ 4.2	87.30	91.02	+ 4.3
Trade.....	134.7	136.7	+ 1.5	224.6	235.8	+ 5.0	62.71	64.83	+ 3.4
Finance, insurance and real estate.....	152.6	156.0	+ 2.2	245.7	256.7	+ 4.5	68.59	70.28	+ 2.5
Service.....	138.3	143.0	+ 3.4	233.1	250.9	+ 7.6	49.85	52.60	+ 5.5



Every week-day, rain or shine, more than 100,000 children, mainly boys, deliver newspapers to customers' homes. Many Canadians, among them the Prime Minister, made their first earnings as newspaper carriers.



Geologists carrying out an electro-magnetic survey on the ground, one of many which have opened up new mining districts. Mining is one of the highest paid industries, average weekly wages and salaries amounting to \$93.97 in October, 1960.

Unemployment Insurance

In July 1940, an Unemployment Insurance Act provided Canada with a contributory scheme of unemployment insurance and a nation-wide free employment service. Administration of the Act is entrusted to an Unemployment Insurance Commission, consisting of a Chief Commissioner and two commissioners—one appointed after consultation with organized labour and one after consultation with employers. Regional and local offices strategically located across the country handle applications for employment and claims for unemployment insurance benefit.

All persons employed under a contract of service are insured unless specifically excepted. Exceptions include such employments as agriculture, domestic service, school teaching and those employed on other than an hourly, daily, piece or mileage basis with annual earnings exceeding \$5,460. Persons employed on an hourly, daily, piece or mileage basis are insured regardless of earnings level. Equal contributions are required from employers and employees, the specific amount to be determined by the weekly earnings of the employee. The Federal Government adds one-fifth of this total and pays administration costs. In order to protect, in some measure, the standard of living of the wage-earner when unemployed, the weekly benefit rate is related to the weekly contribution which varies between defined earnings classes. The contribution schedule contains 12 classes, ranging from 10 cents where weekly earnings are under \$9.00 to 94 cents in respect of weekly earnings of \$69.00 or over. Maximum weekly benefit rates are \$27.00 to persons claiming at the single person rate and \$36.00 for those with dependents. Maximum entitlement in dollars is a function of previous contributory employment and the current weekly benefit rate. An allowable earnings feature provides automatic adjustment of weekly benefit where earnings in a week exceed 50 p.c. of the claimant's benefit rate.

The Act contains a special provision whereby the usual contribution requirements are relaxed somewhat during a 5½-month period commencing with the first week of December each year. During this interval workers unable to fulfil the normal requirements for benefit may draw seasonal benefit if they have at least 15 weeks in insured employment during the fiscal year,

or have terminated benefit since the previous mid-May. During the six-month period December 1, 1959 to May 31, 1960 almost 40 p.c. of the benefit periods established were classed as "seasonal benefit periods".

**Persons Insured under the Unemployment Insurance Act,
by Industrial Group and Province, as at June 1, 1960¹**

Industrial Group	Both Sexes	Province	Both Sexes
Forestry and logging.....	61,200	Newfoundland.....	70,900
Mining, quarrying and oil wells.....	100,000	Prince Edward Island.....	12,200
Manufacturing.....	1,282,900	Nova Scotia.....	141,700
Construction.....	309,700	New Brunswick.....	114,000
Transportation, storage and communication.....	359,500	Quebec.....	1,115,500
Public utility operation.....	47,800	Ontario.....	1,608,400
Trade.....	709,800	Manitoba.....	213,900
Finance, insurance and real estate...	159,900	Saskatchewan.....	95,900
Service.....	556,500	Alberta.....	235,500
Unspecified.....	36,400	British Columbia.....	380,000
Claimants.....	364,300		
Total.....	3,988,000	Total.....	3,988,000

¹ Preliminary.

During the 12 months ending October 31, 1960, a total of 2,668,000 claims for benefit were filed at local offices. A total of 2,211,000 claims were classed as entitlements and benefit payments amounted to \$465,600,000. For the 12 months ending October 31, 1959 comparable data were 2,430,000 claims filed, 2,007,000 entitlements and payments amounting to \$410,600,000.

The National Employment Service

Under authority of the Unemployment Insurance Act, the Unemployment Insurance Commission operates a free employment service. There are more than 200 National Employment Service offices serving workers and employers across Canada. During the 12 months ending October 31, 1960, a total of 932,600 vacancies were filled by the employment service. This total included 643,300 jobs for regular employees, 248,400 casual placements and 40,800 filled by transfers between areas.



This is one of the jobs that has its seasonal peak in the winter. Distributors of fuel oil for home heating keep records of degrees of temperature and number of days elapsed to produce degree-day charts for each home supplied. Oil is poured into tanks from outside the house, and the householder has no need to check his oil-gauge. Oil is used for heating by 54 p.c. of householders, coal or coke by 16 p.c., gas by 15 p.c., wood by 13 p.c.

Labour Legislation

Under Canada's federal system of government, labour laws may be enacted either by the provincial legislatures or by Parliament, depending on the nature of the industries concerned. The field in which federal legislation applies includes such industries as navigation and shipping, air transport, transportation extending beyond the bounds of a province, telegraphs, radio and television, grain elevators, banking, and operations of federal Crown companies. Most employment in factories, mines, construction, commercial firms and the service industries is subject to provincial legislation.

The federal Industrial Relations and Disputes Investigation Act and a comparable Act in each province assert the right of workers to belong to unions of their own choice, and provide a procedure for the certification of a union as the bargaining agent of a unit of employees. Following certification, that is, official recognition by the Labour Relations Board that a union represents a majority of the workers in a plant or part of a plant, the union and the employer are required to bargain collectively for an agreement governing wages and working conditions. Once signed, a collective agreement is binding upon the employer, the trade union and all the employees concerned, and any differences arising between the parties during the term of the agreement must be settled by arbitration or otherwise, without resort to strike or lockout.

The federal Act and most of the provincial Acts provide for compulsory conciliation. If a dispute arises in connection with the negotiation of an agreement, employees are forbidden to strike until they have gone through a process of conciliation (first, by government conciliation officers and, secondly, failing settlement at the first stage, by a conciliation board). One member of a conciliation board is nominated by the union and one by the employer. The chairman is named by the other two members or, failing agreement, by the Minister of Labour.

The parties are not obliged to accept the recommendations of a conciliation board and, at the end of a specified period after the receipt of the board's report by the Minister, are free to strike or lockout. The temporary suspension of the right to strike is based upon the principle that the time required for the statutory conciliation procedures serves as a "cooling off" period, and that, with the publication of the report, public opinion is brought to bear on the parties to reach agreement.

Unfair labour practice provisions prohibit employer participation in the organization or administration of a trade union or discrimination against workers for union membership or activities. Penalties are provided for violations of the Acts.

In some provinces, certain classes of employees such as policemen, firemen, teachers and, in Quebec, employees of municipalities or public utilities and members of the provincial civil service are forbidden to strike and, in case of dispute, have their wages and working conditions determined by final and binding arbitration.

In Alberta and British Columbia, restrictions have been placed on picketing in support of an illegal strike. In British Columbia, trade unions and employers' associations have been made legal entities liable for damage actions. In 1960 new legislation for the registration and regulation of trade unions was enacted in Newfoundland.



Polyethylene film, supported by laminated wooden frame structure, encloses the new Arts Building at the University of New Brunswick. No interior heating is needed during sunny days, as the film traps the sun's rays.

WINTER WORK

Throughout Canada, with the exception of the Pacific coast, the mean daily temperature in January varies from 20°F. to -20°F. During the winter snow falls to depths ranging from 10'' to 342'', with a country-wide average of 76''. These factors present a challenge to Canadian contractors who, in their efforts to maintain construction operations throughout the year and thus keep both men and equipment employed, have pioneered ingenious and effective methods of hoarding.



Work progresses on a bridge in Ottawa although the snow has collected on the roof covering and can be seen in depressions in the material.



Steel erection on the cantilever section of the Champlain Bridge over the St. Lawrence Seaway continues during winter, thanks to Arctic clothing, safety precautions and improved machines.

At Montreal, a 6,260-foot sewer was laid in 100 days in winter. The frozen ground actually proved to be an advantage in areas where water seepage and caves might have presented hazards.

With haul roads in better shape in winter than in summer, dirt removal at the site of the huge South Saskatchewan Dam project proceeded throughout the winter. Steel went up as the ice proved to be excellent support for equipment and materials.





Canadians spent 5 p.c. more on service in 1960 than in 1959 although they spent two p.c. less on durable goods. In 1959, they spent \$582,000,000 in restaurants.

Fair employment practices laws enacted by Parliament and by the legislatures of six provinces are designed to ensure to all persons an equal opportunity to obtain and retain employment, subject only to individual qualifications for a particular job. Discrimination on grounds of race, colour, religion or national origin is forbidden. The Acts also forbid discrimination by trade unions in the admission of their members. The procedure for dealing with complaints under the Acts is one of investigation, conciliation and persuasion but there is provision for the issuance of an order by the Minister requiring compliance with the law, and, as a last resort, for prosecution in the courts. In some Acts provision is made for educational programs to promote a public awareness of the law.

Under a workmen's compensation law in each province, a worker employed in an industry covered by the Act is entitled to compensation and medical aid for personal injury resulting from an accident arising out of and in the course of employment or for disablement caused by an industrial disease, unless he is disabled for less than a specified number of days, known as the waiting period. Compensation is paid at the rate of 75 p.c. of average earnings, subject to the provision that earnings above a specified maximum may not be taken into account. The ceiling on annual earnings varies from one province to another, ranging from \$3,000 to \$6,000. After the period of temporary disability is over, any permanent disability resulting from the accident is determined, and an award made in the form of a life pension or a lump sum. In fatal cases, dependants are awarded fixed monthly amounts. Compensation and medical aid are paid from an Accident Fund to which employers are required to contribute and which provides a system of mutual insurance.

Apprenticeship laws in all provinces provide for the training of young people in designated skilled trades through a combination of on-the-job training and class instruction.

Seven provincial laws and a federal law require that women be paid the same wage rates as men when they do "the same", "identical or substantially identical", or "comparable" work. (The wording of the Acts varies.)

Provisions for enforcement of the equal pay laws are similar to those of the fair employment practices Acts.

All provinces have minimum wage laws, and, except in Prince Edward Island, minimum wage rates are in effect. These are applicable in most provinces to workers of both sexes. In Nova Scotia and Ontario, minimum rates apply only to women, and in New Brunswick, only one order covering the canning industry is in effect for men.

Five provinces have laws of general application limiting working hours. The Acts of Alberta, British Columbia and Ontario set daily and weekly limits on hours (e.g., 8 hours in a day and 48 hours in a week in Ontario), whereas those of Manitoba and Saskatchewan provide that time and one-half the regular rate must be paid where work is carried on beyond specified daily or weekly hours.

Minimum wages and maximum hours of work are set for some industries and areas under the Quebec Collective Agreement Act and under industrial standards or similar laws in six other provinces.

Annual vacations with pay are provided for workers in Canada under eight provincial laws and a federal law. The federal law provides for a one week's vacation with pay after one year of service and two weeks after two years for employees in undertakings subject to the jurisdiction of Parliament. In New Brunswick, Nova Scotia, Ontario and Quebec, a worker is entitled to a vacation with pay of one week after a year of employment; in Alberta, the vacation requirement is one week after one year's service and two weeks after two years; and in British Columbia, Manitoba and Saskatchewan, an employee is entitled to a two weeks' vacation with pay after working one year. The Saskatchewan Act further provides for a three weeks' vacation after five years' service with the same employer. The New Brunswick legislation applies only to mining, construction, and the canning and packing industries.

Under the Canadian Vocational Training Co-ordination Act, federal funds are available toward the costs of training unemployed people; in 1960 the Federal Government's share was increased from 50 p.c. to 75 p.c.



Under the same Act, training of the blind for industrial employment is also provided, with the Federal Government supplying 50 p.c. of the cost. ➤





Eskimos have a high degree of mechanical aptitude and are most ingenious at adapting and maintaining machinery. This Eskimo has been taught a productive trade under government sponsorship.

Legislation, which may be federal, provincial or in some instances municipal, sets standards to be observed in work places so as to secure the safety and health of employees and provides for a system of inspection to ensure their enforcement. In all provinces in which mining is carried on, laws designed to ensure the safest possible working conditions in mines are in effect. Factories Acts in eight provinces lay down rules with respect to premises, equipment and practice in factories, covering such matters as sanitation, heating, lighting, ventilation, machine-guarding, reporting of accidents and various welfare measures. Steam boilers must be built to an approved design and operated by engineers holding certificates of the proper class for the equipment involved. Legal standards for the construction industry are enforced by municipal inspectors in some provinces. With respect to railways, a Board established by federal legislation has authority to issue safety rules having the force of law. Safety measures for the protection of seamen are prescribed by a federal law, the Canada Shipping Act.

Labour Organizations

Close to 1,460,000 men and women from Newfoundland to British Columbia were members of labour unions in 1960. Affiliates of two central bodies—the Canadian Labour Congress, over a million strong since its formation in 1956, and the Canadian and Catholic Confederation of Labour—continued to account between them for well over 80 p.c. of organized labour, while much of the balance of union membership was represented by organizations active on a regional, national or international level, but independent of a central labour congress.

At the beginning of 1960, unions belonging to the Canadian Labour Congress had a total membership of 1,123,000, while the Canadian and Catholic Confederation of Labour was approximately 102,000 strong. Following a change of name later in the year, the Canadian and Catholic Confederation of Labour became known as the Confederation of National Trade Unions.

As in previous years, more than two-thirds of the organized labour force in Canada belonged to unions that operate on the international level. Ninety of the 108 international unions active in Canada in 1960 were affiliates of the Canadian Labour Congress, and 85 of these were within the American Federation of Labor and Congress of Industrial Organizations as well. Eleven of the remaining 18 international unions had no congress link in Canada, but were affiliated with the AFL-CIO.

National and regional unions in Canada at the beginning of the year totalled 48, with 17 unions in this group holding CLC affiliation and 13 belonging to the CCCL.

Taken together, international, national, and regional unions had more than 1,372,000 members within their ranks in a total of 156 organizations ranging in size from under ten to 82,000 members.

The grand total of nearly 1,460,000 members reported by labour organizations in 1960 was equal to approximately 32 p.c. of the estimated total number of non-agricultural paid workers in Canada.

Headquarters of the Canadian Labour Congress in Ottawa. In 1960 it approved proposals for the participation of organized labour in the formation of a new broadly-based political party.





A scene from *HMS Pinafore*, an outstanding success at Stratford, on Canadian television and in New York.

The Arts

The development of the arts in Canada has received increasing attention in recent years both in the press and through public awareness. More and more Canadians are discovering the pleasures to be derived from opera or ballet, drama or music as the arts begin to assume the place of importance in our national life which in many countries is taken for granted. A growing faith in the future of Canadian arts is indicated by the widespread support given the Canada Council and by the contributions of time, money and effort of the many women's committees, boards of trustees, individuals and corporations across the country. The past year gave ample evidence that such faith has not been misplaced.

Festivals

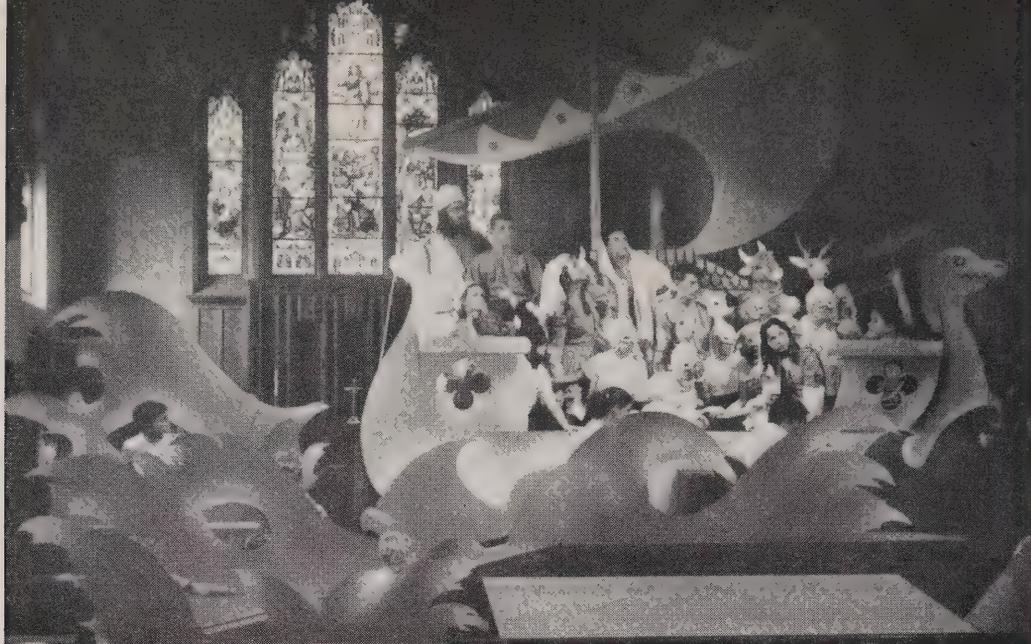
Canada's international reputation in the arts has been considerably enhanced by such annual events as the Stratford Shakespearean Festival. The Stratford theatre, with its boldly designed open stage and steeply sloped auditorium is undoubtedly one of the most original in the world and a significant contribution to Shakespearean production. Two other International Festivals in Montreal and Vancouver also serve during the summer months as showcases for some of Canada's finest artists.

In 1960, the Stratford Festival completed one of the most successful seasons in its history. Attendance at three Shakespearean productions, *King John*, *A Midsummer Night's Dream* and *Romeo and Juliet*, numbered more than 200,000. In addition to the Shakespearean productions in the Festival Theatre, two Canadian plays, winners of the Toronto Globe and Mail playwriting competition, were presented by the Stratford Company. *The Teacher* by John Gray and *Blind Man's Buff* by Fred Euringer attracted considerable attention during a short run in the Avon Theatre.

The perennial success of the dramatic presentations at Stratford has come to be expected. The presentation of four Sunday afternoon concerts proved to be the most successful in the Festival's history. The three leading players of the music season, pianist Glenn Gould, violinist Oscar Shumsky and 'cellist Leonard Rose combined their talents in two of these. The National Festival Orchestra and the CBC Orchestra were heard in the others. In addition to the Sunday concerts, several performances of chamber music were presented on Saturday mornings in the theatre by members of the National Festival Orchestra. These too proved to be remarkably popular.

The most successful feature of the music season, however, was a production of Gilbert and Sullivan's *HMS Pinafore* directed by Tyrone Guthrie and conducted by Louis Applebaum. The operetta played to sold-out houses in Stratford and following the season moved on to New York where it repeated its success in the off-Broadway Phoenix Theatre. A televised version of the production was shown across Canada by the Canadian Broadcasting Corporation.

The Festival also increased its ancillary activities during the 1960 season. The most significant event was the organization of an International Composers' Conference. Sponsored by the Canadian League of Composers, the conference brought 62 representatives of 20 countries to Stratford for a week to discuss such problems as a composer's training, his relationship to performers and the public, his rights as defined by copyright laws, and modern developments in the music world such as serial techniques and electronics. Five concerts were held at which works by many of the composers present were played. Another important feature of the 1960 Festival was the Civic Symphony and Band Workshop under the direction of conductors Walter Susskind and Harman Haakman. The workshop was designed to strengthen the many civic orchestras in the country. A promising achievement of this enterprise was the formation of a National Youth Orchestra. Mr. Susskind's experience with the National Youth Orchestra of Great Britain was readily evident in the calibre of the performance of this youthful group. An international film festival, an exhibition of paintings by ten contemporary British



A scene from the Vancouver International Festival production of "Noah's Flood".

Columbia painters, a panorama of the Western Canadian Indian plus exhibits of Canadian handicrafts, art, theatre and books rounded out the ancillary activities.

Vancouver's 1960 Festival was also the most successful that city has held. About 12,000 people attended three concerts of the New York Philharmonic conducted by Leonard Bernstein and the other attractions during the 3½-week program were correspondingly popular. Revenue was some \$20,000 above predictions. In spite of stiff competition from such imported talent as the New York orchestra and the Peking Opera, two of the highlights of the 1960 Festival were "home-grown". An all-Canadian production of Puccini's *Madame Butterfly* with Toronto soprano Teresa Stratas in the leading role received warm praise from the critics. Not as predictable was the success of a modern musical setting of an English miracle play *Noah's Flood*, which was produced in Christ Church Cathedral and proved to be one of the hits of the season.

The oldest of the Canadian festivals, the Montreal Festivals Society this year marked its twenty-fifth anniversary. Originally founded to present a festival of music, the society has expanded through the years to include drama, painting, sculpture and, this season, films. A total of 40 performances were given during the 1960 Festival from August 2 to September 3. Of the twelve attractions, seven were Canadian. This marked a decided change of policy from a few years ago when the major productions and stars were imported from abroad.

Montreal's distinguished company, Le Théâtre du Nouveau Monde, opened the 1960 Festival with a sparkling production of George Feydeau's comedy, *Le Dindon*. The same group later repeated its previously successful staging of *Les Femmes Savantes* of Molière. The biggest musical production of the season was Mozart's *The Abduction from the Seraglio*. Other attractions at the Festival included a performance of the St. Matthew Passion under the direction of Wilfred Pelletier, concerts by Les Petites Symphonies de Montréal and Les Disciples de Massenet, and programs by companies of Indian, Spanish and Czechoslovakian dancers.

Music

Many Canadian orchestras during 1960 continued to struggle close to the brink of financial disaster. This was due in part to the normally high cost of operations in what is generally recognized to be one of the more expensive of the arts. There are, however, several factors which make running a symphony orchestra in this country particularly complicated. Foremost of these is the lack of many large metropolitan centres which might support fully professional orchestras on a full time basis. Outside of Toronto and Montreal, Canadian orchestras must often rely on the services of part-time musicians—music teachers, businessmen or housewives who enjoy making music as a hobby.

In an attempt to overcome these handicaps, Canadian orchestras have sought to build up a nucleus of musicians on seasonal contracts. Many orchestras have indeed raised their standards of performance considerably in this way. But such methods have put a heavy strain on already stretched budgets. The dangers inherent in such rapid development were demonstrated in 1960 by the collapse of the Ottawa Philharmonic. In spite of very good local support, a considerable grant from the Canada Council and a sold-out subscription series, this orchestra ended the 1959-60 season with a \$23,000 deficit. This loss, together with the prospect of increased costs for the coming year, persuaded the directors to suspend the orchestra for one season.

An experimental solution to this problem of finances is being tried out in Calgary and Edmonton where the two symphonies in 1960 took the first steps toward creating a joint nucleus which would serve as the core for both orchestras.

Despite the constant strain of deficit financing, however, the 1960 season was highly successful for most Canadian orchestras. With the help of the Canada Council many orchestras made a concentrated effort to extend their activities and reach a wider audience. In Montreal, a series of outdoor concerts at the Chalet on the top of Mount Royal proved to be extremely popular. The orchestra also gave a series of concerts in the city sports arena which attracted about 11,000 spectators per performance. The concerts were sponsored by the *Montreal Star* and were offered to the public for the low admission price of one dollar. Many Canadian orchestras also attempt to develop an appreciation of symphonic music among young people. The ten major orchestras gave a total of 187 special youth concerts during the 1959-60 season.



A scene from "The Killdeer", presented by the University of Toronto Alumnae Dramatic Club. This play won the 1960 Central Ontario Regional Festival award of the Dominion Drama Festival.

The Choir of St. Joseph's University, Moncton, New Brunswick, winner of many trophies over the years. In 1960 it made a coast-to-coast tour.



In addition the Edmonton and Calgary Symphonies both support junior orchestras in those cities and Victoria announced plans during 1960 to organize such a group in the near future. Many of the orchestras also give performances in some of the more remote areas where symphonic music is not ordinarily available. In 1960 the Vancouver, Victoria, Edmonton, Toronto, Quebec and Halifax orchestras gave out-of-town concerts.

In spite of such expanding activities of the larger orchestras, however, there remain many small towns and cities not easily accessible. With the assistance of the Canada Council more and more of these centres are beginning to enjoy live orchestral music presented by small chamber groups. One of the most widely travelled of these is the Hart House Orchestra of Toronto. During the autumn of 1960 this organization undertook the most extensive tour of its history. The 14 members of the orchestra covered some 7,000 miles by plane, train and bus and visited some 35 centres in British Columbia and other western provinces. During the five-week tour they played in many localities which had never before heard a concert of this nature and travelled close to the Arctic Circle to perform in Dawson City and Yellowknife. On a more modest scale, the McGill Chamber Orchestra of Montreal celebrated its 20th anniversary by embarking on its first concert tour outside the city. The most extensive program of this nature, however, is carried out by Les Jeunesses Musicales du Canada. This organization, which numbers some 50,000 members across the country, sent out artists to give concerts to young people in about 72 Canadian centres. With Canada Council assistance it also toured two one-act operas by the Canadian composer Maurice Blackburn. For a number of years the JMC has also organized a summer music camp at Mount Orford south of Montreal. A new concert hall was opened on these premises during 1960.

Spurred by the efforts of such organizations as the Canadian League of Composers, more and more original Canadian music is being performed. A Canadian Music Centre to house published and unpublished scores and to promote the performance of Canadian music was established in Toronto in 1959. A concert of Canadian music has been presented annually in Montreal. In the same city the Montreal Jewish Music Council sponsors a series entitled "Meet the Composer" which is designed to acquaint the public with Canadian music being written today. The Canada Council also stimulates composition by enabling many of the country's orchestras and chamber groups to commission original works. During 1960 several major works were given a first performance as a result of this scheme.

Opera

Today more and more Canadian singers are taking part in a burgeoning musical life. In 13 seasons in Toronto, opera has developed from an amateur activity to a business with an annual budget running well into six figures. By 1967, it has been predicted, Toronto will have a regular winter opera season lasting at least 10 weeks and Canadian opera productions will tour with complete orchestra to many parts of Canada and the United States.

Credit for raising opera to a position of some popularity in this country is due largely to the Opera Festival Association of Toronto. Out of the annual opera festivals sponsored by this group has grown a fully professional Canadian Opera Company. During 1960 this company gave 21 performances of three works in Toronto: Verdi's *Otello*, Mozart's *The Marriage of Figaro* and *A Night in Venice* by Johann Strauss Jr. Following the Toronto season a chamber company went on the road. In 1960, 42 performances of Nicolai's *The Merry Wives of Windsor* were presented in centres from coast to coast.

Toronto was also the scene of several other operatic activities during the 1960 season. Of particular interest was the staging at the Hart House Theatre, of a Canadian one-act opera by composer John Beckwith and poet James Reaney. The work was first commissioned by the CBC and given its radio premiere in 1959 under the title *Night Blooming Cereus*. In the same theatre, the Royal Conservatory Opera School presented its regular season which in 1960 included Rossini's *The Marriage Contract*, Douglas Moore's *Gallantry* and Vaughan Williams' *Riders to the Sea*.

In Vancouver no less than four organizations presented operatic seasons. As noted above, the Vancouver Festival staged Puccini's *Madame Butterfly*. The newly formed Vancouver Opera Association took the first steps towards the creation of a permanent company on the west coast. Early in the year a production of Bizet's *Carmen* was presented to capacity houses at the Queen Elizabeth Theatre. A second production, Puccini's *La Bohème*, was undertaken in the autumn with equal success. The level of performance achieved in these large scale operatic productions was due in large measure to pioneer work done in the city by amateur groups and the Summer School held at the University of British Columbia. During 1960 the school presented a season of opera which included productions of *The Secret Marriage* by Cimarosa and



The finale of Act 3 of "The Marriage of Figaro" by the Canadian Opera Company.

Benjamin Britten's *Albert Herring*. The B.C. Opera Players, an amateur company, gave four performances of Gounod's *Faust* in the Queen Elizabeth Theatre.

In addition to the production of *The Abduction from the Seraglio* before mentioned, Montreal audiences were able to see a production of *Carmen*, produced by the Montreal Opera Guild.

In Ottawa, Verdi's *Il Trovatore* was produced by the Ottawa Grand Opera Company.

Ballet

During 1960, there were three ballet companies performing in Canada. The largest and most widely recognized of these is the National Ballet of Canada which, during its ten-year career, has appeared in more than 100 cities in the United States and employs its dancers for close to 40 weeks a year. In February the company held one of its most successful seasons in Toronto where a total of 44,700 people attended performances at the Royal Alexandra Theatre. This figure represents about 96 p.c. of capacity. Later the company went on tour to some 70 Canadian and 30 American cities in 16 weeks. At the end of the 1959-60 season the company announced a slight profit made possible by good attendance and generous donations and grants. In the autumn the troupe embarked on a 24-week tour which again took it to many parts of Canada and the United States. Three new ballets were added to the repertoire for the tour: *The Remarkable Rocket*, *Barbara Allen*, and *Antic Spring*.

Canada's oldest ballet company, the Royal Winnipeg, gave evidence during 1960 of having recovered completely from the effects of a fire which almost destroyed it six years before. By 1959, under the artistic direction of Arnold Spohr, the company had recovered sufficiently to give a joint performance with the Winnipeg Symphony before Her Majesty the Queen. In 1960 it travelled some 10,000 miles through the eastern provinces where it had not been seen for about seven years. One work in the company's repertoire was a new ballet by the American choreographer Robert Moulton entitled *Brave Song*. Based on authentic Indian dances and music, it is perhaps typical of a growing attempt to find dance themes based on North American life.



A rehearsal of the Royal Winnipeg Ballet for a 1960 summer-time television show, "Come Dance With Us".

A scene from "The Remarkable Rocket", a ballet which brings to life a fireworks display in the form of spectacular dancing. The National Ballet of Canada took this ballet, among others, on an eight-month tour of Canada and the United States beginning in October, 1960.



Canada's third company, Les Grands Ballets Canadiens of Montreal, opened its annual spring season in its home city with three new ballets: *Introduction*, choreographed by Eric Hyrst, *Les Folies Françaises*, and *Berubee*, both choreographed by Brydon Paige. During the year the company also made a return appearance at the Summer Dance Festival at Jacob's Pillow in Lee, Massachusetts and, under the sponsorship of the Community Concerts Association, toured for six weeks through Eastern Canada and the United States.

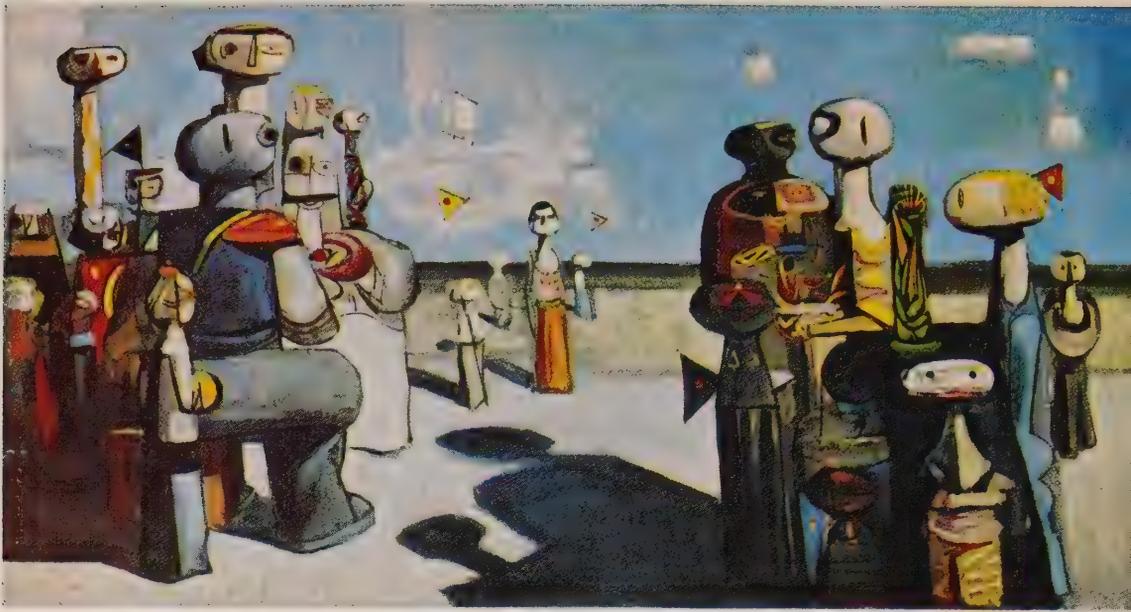
Theatre

Although the reputation and success of such theatrical enterprises as the Stratford Festival remain very high, most Canadian legitimate theatres must fight a continuing struggle for survival. The 1960 season cast little new light on this seeming paradox. Stratford attracted a 92 p.c. capacity attendance for the summer but in Toronto the Crest Theatre reported a mere 37 p.c. average. In Montreal the Théâtre du Nouveau Monde announced that owing to financial losses incurred during the 1959-60 season, the company would produce only two plays during the coming year.

Theatre in English Canada

The most exciting event on the English theatrical scene was the opening of the new O'Keefe Centre in Toronto. A pre-Broadway premiere of the Lerner and Loewe musical *Camelot* attracted capacity houses to the 3,200 seat auditorium. This attraction was also partly responsible no doubt for the exceptional success of the subscription tickets. A total of 14,000 patrons signed up for the Theatre Guild subscription series which will bring attractions to both the O'Keefe Centre and the Royal Alexandra Theatre. At the end of the year it appeared as though the new Toronto auditorium, instead of crippling the Royal Alexandra, had actually contributed to a revitalization of interest in touring productions.

Among the local theatres, however, there seemed to be evidence of a changing pattern of management during the 1960 season. Attracted by the possibility of backing a lucky hit, more and more independent producers were beginning to speculate in the theatrical market. Housing these new productions became one of the central problems of 1960. A new theatre named The



"The Dignitary", by Kenneth Lockhead.

CANADIAN PAINTINGS FROM THE NATIONAL GALLERY

"Glams on the Hills", by J. E. H. Macdonald.





"Mountain Lake", by F. H. Varley. A.R.C.A.

"Micmac Indians", artist unknown, circa 1820.



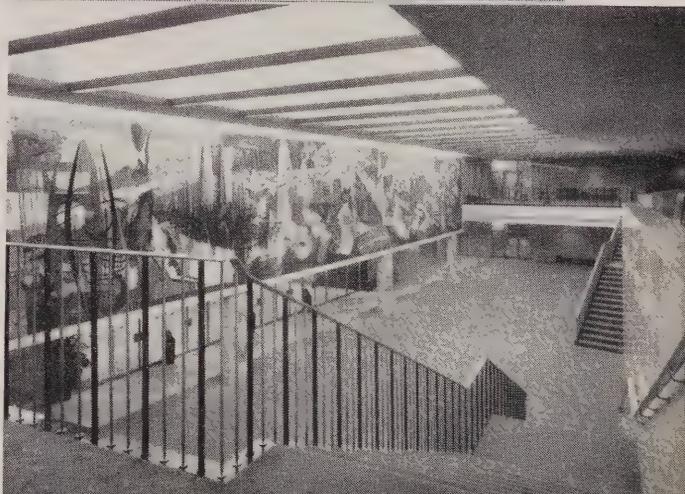
Speakeasy opened on Queen Street and in spite of financial difficulties ended the year with a successful revue entitled *Just for Fun*. An interesting production of *The Connection* was staged at the House of Hamburg, for some years a popular jazz club in the city. The Canada Society of Drama and Art was formed to provide facilities for some of the Toronto companies. The premises formerly occupied by the New Play Society on Bloor Street were renovated and a 260-seat auditorium constructed in the old gymnasium. The new theatre has been called Centre Stage and several productions have been presented there. Of particular interest was the staging by the Arts Theatre of a new Canadian play by Len Peterson entitled *The Great Hunger*. With stage facilities in greater demand, the Crest Theatre also found it profitable to rent their quarters. Finishing last year with a disheartening five figure deficit, the Crest announced that it would reduce its 1960-61 season to 25 weeks, leaving the remaining 10 weeks of the theatre year open for bookings by other managements. The first independently sponsored production, *Epitaph for George Dillon*, opened the autumn season with considerable promise.

The Canadian Players, founded several years ago to bring classical theatre to the smaller centres of the country, in 1960 announced radical organizational changes. The company was reconstituted as a non-profit foundation and a Canadian Players' Guild, similar to those operated by the National Ballet and the Canadian Opera Company, was created to widen the base of support. During the 1959-60 season the company gave 113 performances in Canada and 68 in the United States. In 1960 it launched two companies and four productions: one toured Canada with Brecht's *The Caucasian Chalk Circle* and Shakespeare's *The Tempest*; the other company took Shakespeare's *Julius Caesar* and Shaw's *Saint Joan* to the United States.



The \$12,000,000, 3,200-seat O'Keefe Centre for the Performing Arts opened in October, 1960, in Toronto. Special features include a mechanically elevated 50-piece orchestra pit; production, radio and television control rooms; remote-controlled stage lighting; full size rehearsal hall; kitchens; street-level access to theatre and stage and escalators to the balcony; special provisions for hard of hearing and invalids in wheel chairs.

The marble-walled, 10,000 square foot main foyer is dominated by a mural by R. York Wilson depicting the seven lively arts.



In Winnipeg, the Manitoba Theatre Centre opened its 1960-61 season with a popular production of *Mr. Roberts*. This group was originally formed by two amateur companies and now has a fully professional directorial and administrative staff. In 1959-60 the company produced a season of eight plays to a total audience of 56,000. The Centre also opened a theatre school in the city under the direction of the well-known voice teacher, Esmé Crampton. In Vancouver, Holiday Theatre, a children's theatre formed some years ago by Joy Coghill, presented a program of scenes from Shakespeare to high school students. The Mountain Playhouse in Montreal held another successful summer season in its theatre atop Mount Royal. This group achieved lonely distinction on the Canadian theatrical scene by finishing the 1959-60 season with a slight profit.

Theatre in French Canada

The Montreal season opened ominously with considerable newspaper space being devoted to the "crisis" in the theatre. Nevertheless 1960 proved once again that the drama is more enduring than its lovers will often admit. In spite of gloomy predictions and box-office set-backs, the year saw the opening of a new theatre in the city and an outstanding run by a new Canadian play. If theatre was changing in Montreal there was every indication that such change was ferment rather than decay.

As in Toronto, the problem of finding suitable facilities in which to perform was one confronting many Montreal companies. With the exception of Gratien Gélinas' Comédie Canadienne, all the troupes are forced to lease quarters which vary considerably in price and suitability. The International Theatre performs in a converted powder magazine on St. Helen's Island from which it derives its name, "La Poudrière". Les Apprentis Sorciers, an amateur group originally installed above a bakery have moved into a converted garage which they have nostalgically named "La Boulangerie". It appeared at the end of the year that at least one company would have to suspend its activities for lack of a place to play. When its quarters on St. Catherine Street were condemned by the Fire Department, the recently formed Égégore was forced to withdraw a successful production of Tennessee Williams' *Summer and Smoke* until it could find a new home. Le Théâtre du Nouveau Monde has announced that it will launch a campaign to acquire its own premises to relieve it of the financially crippling necessity of performing in the Orpheum Theatre.

The experiences of the Rideau-Vert company reveal the problems confronting many of the Montreal groups. This company performed successfully for several years in the tiny Anjou Theatre. Frustrated by the limitations imposed by this theatre, the group moved into the Gésu but found it impossible to meet the substantially larger rent. After a year of severely curtailed activities, the company this season reopened the Stella Theatre and will present eight plays, each to run for one month.

The Comédie Canadienne continues to be one of the foremost promoters of original Canadian drama. During 1960 no less than four Canadian plays were presented, the most successful being Gratien Gélinas' *Bousille et les Justes* which became the second Canadian play to reach one hundred performances.

Sets and costumes designed by Robert Prevost have been a trade mark of the Théâtre du Nouveau Monde since its inception. This is one of the many cultural organizations assisted by the Montreal Council of Arts, which is supported by contributions from a number of municipalities on the Island of Montreal.



Altogether it was seen by close to 100,000 spectators in Montreal and on tour. A system of alternating productions was introduced at the theatre permitting the presentation of several plays in something like repertory style. A revival of Paul Toupin's award-winning play *Brutus*, the staging of Guy Dufresne's *Le Cri de l'Engoulevent* and the production of Marcel Dubé's *Florence* were all well received.

The most promising step toward the creation of a distinctively Canadian theatre, however, was the opening in November of a National Theatre School. Long a dream of theatre lovers in this country, the school will include Canada's two dramatic traditions. English and French students will work side by side in such non-verbal activities as movement, fencing, dancing and acrobatics but take other courses in their own language. For the first year, classes in acting only will be offered but in succeeding sessions instruction in the various aspects of production will be introduced. Thirty-one students, chosen on a coast to coast auditioning trip from among 145 applicants, began classes in 1960. They will divide their time between Montreal (the permanent home of the school) and Stratford, where during the summer months classes will be held in conjunction with activities at the Festival.

The Visual Arts

More Canadians than ever before are looking at, talking about, selling and buying works of art. During four weeks of a special Van Gogh exhibition the Montreal Museum of Fine Arts reported more than 100,000 admissions, more visitors than the museum attracted annually a few years ago. During its first ten months in new quarters, the National Gallery in Ottawa was visited by about 500,000 people. Auctions of Canadian paintings, almost unheard of some years ago, are being held in increasing numbers.

Primarily responsible for this increasing interest in the visual arts are the many art circuits active in Canada. These agencies, each covering about 100 small centres, circulate exhibitions to small galleries, libraries, schools and universities in all provinces except Quebec. Typical of the shows organized for these circuits by the National Gallery is an exhibition of reproductions of Persian miniatures which has been on tour for four years without having been shown in the same centre twice. Three of the main organizations of this type are the Western Canada Art Circuit, the Maritime Art Association and the Western Ontario Circuit. Many of the major municipal galleries also engage in such extension activities. The most active is the National Gallery

which during the year circulated about 50 exhibitions across Canada. The National Gallery also compiled one of the most comprehensive exhibitions of Canadian art yet sent abroad. This was displayed in Mexico as part of that country's celebrations of the 150th anniversary of its independence. In exchange, Canada played host to the most important display of Mexican and Aztec art ever to enter the country. The show opened in Vancouver in the autumn of 1960 and was also seen in Ottawa and Montreal.

The Montreal Museum of Fine Arts, celebrating its Centennial this year, undertook what was probably the most ambitious program of any gallery during the season. An extensive exhibition of paintings and drawings by Vincent Van Gogh highlighted the year. (This show was subsequently seen in other Canadian cities.) Its 77th regular Spring Show was the largest in many years and several other highly successful exhibitions were prepared including one gathered from private Canadian collections and entitled "Canada Collects".

The international reputation of Canadian painters continued to grow during the year. The death of Paul-Émile Borduas in Paris brought to a close the somewhat tragic career of one of Canada's leading pioneers in the field of non-figurative art. Although Borduas lived and worked for most of the last ten years of his life in Paris, his work was rooted in Montreal. His influence in this country was considerable, particularly among young painters, although he received little official recognition. Following his death, his work attracted favourable attention in Paris and he was posthumously awarded the Canadian Guggenheim prize. His work, *L'Étoile Noire*, took its place with paintings by Jean-Paul Riopelle, Leon Bellefleur, Edmund Alleyn and Harold Town in the Guggenheim Exhibition in New York where Canada was singled out as having the best balanced group of paintings of any of the 26 countries displaying. Another leading abstract painter whose work has been widely influential was also honoured during 1960. A retrospective exhibition of the paintings of Alfred Pellán was shown in Ottawa and Montreal.

The work of Canadian sculptors has so far received far less attention. The Canada Council has sought to stimulate this difficult and expensive art through scholarships to artists and commission grants to museums. During 1960 the Council offered such grants to six universities to enable them to purchase sculpture or mosaic ornamentation for their campuses. The public was introduced to the work of many sculptors in outdoor exhibitions held in Vancouver, Montreal and Quebec. The first national exhibition of this sort was organized by the Canadian Sculptors' Society with assistance from the Canada Council.



The largest bronze casting ever turned out in Canada, "Family Group" by Art Price is almost nine feet high and weighs nearly three tons.

Writing

The Canadian book publishing industry enjoyed a successful year. Once again non-fiction titles seemed to be in the majority on publishers' lists with biography and history most popular. One of the fastest selling books of the year was J. W. Pickersgill's edition of the Mackenzie King papers, *The Mackenzie King Record*. Other books dealing with the writings and papers of figures in Canadian history include *Public Servant: The Memoirs of Sir Joseph Pope*, edited by Maurice Pope, *Selected Writings of William Lyon Mackenzie* edited by Margaret Fairley, and *The Letters and Journals of Captain George Vancouver* edited by Bern Anderson. The number of political biographies which appeared during the year would seem to give evidence of an increasing interest on the part of the reading public in the more personal side of Canadian history. Among them are *Alexander Mackenzie*, *Clear Grit* by Dale C. Thompson, *Brown of the Globe* by J.M.S. Careless, *Arthur Meighen: The Door of Opportunity* by Roger Graham and *Le Vrai Visage de Duplessis* by Pierre Laport. Studies of various other aspects of Canada's culture and development appeared including two histories, *From Sea Unto Sea* by W. G. Hardy and *Histoire du Canada des Origines au Régime Royal* by Gustave Lanctôt. An assessment of Canada's role in the Cold War was written by James M. Minifie under the title, *Peacemaker or Powder Monkey*. Aspects of French-English relations in Canada were discussed by several authors in *Canadian Dualism* edited by Mason Wade, and Professor Frank Underhill's lifelong *Search for Canadian Liberalism* was illustrated by a collection of his writings.

Canadian fiction began to attract more international attention during 1960. Morley Callaghan's new novel, *The Many Colored Coat*, received widespread interest. Thomas Raddall won the Doubleday Canadian Prize Novel Award for *The Governor's Lady*. Other novels which appeared in English include *This Side Jordan*, a novel by Margaret Laurence set in Ghana; Phyllis Brett Young's second book, *The Torontonians*; Fred Bosworth's *The Strange One*, David Walker's *Where the High Winds Blow*, and Brian Moore's



In the summer of 1960, the "Canada Council Train" brought nearly 200 high school students, chosen by teachers for academic achievement and extra-curricular interests, to Stratford from every province in Canada. They attended plays, opera and a concert and explored backstage mysteries during their three-day, all-expenses-paid visit.

The Luck of Ginger Coffey. Some 18 novels were published in French including *Le Libraire* by Gerard Bessette, *La Soif et le Mirage* by Yves Thériault, *Souvenirs pour Demain* by Paul Toupin, *Doux-Amer* by Claire Martin and *Tête Blanche* by Marie-Clair Blais.

Several anthologies and collections of essays were published in 1960, including *The Oxford Book of Canadian Poetry*, edited by A. J. M. Smith; *Canadian Short Stories*, collected by Robert Weaver; *Canada on Stage*, edited by Stanley Richards; *Scotchman's Return and Other Essays*, by Hugh MacLennan; *A Voice from the Attic*, by Robertson Davies. Something of a literary sensation was created in French Canada with *Les Insolences du Frère Untel* which in a few months sold close to 100,000 copies.

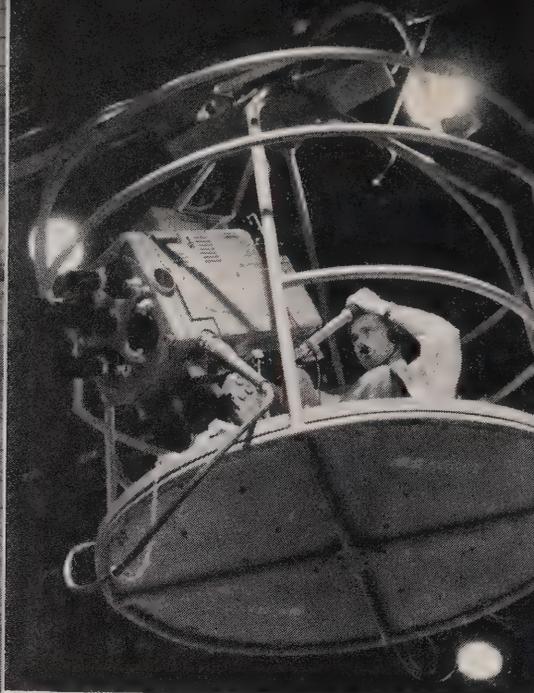
A book of poetry, *Eyes Without a Face* by Kenneth McRobbie, appeared as the first of the Gallery Editions issued by the Isaacs Gallery in Toronto and intended to represent Canadian poets and artists. The first volume in a series designed to illustrate the best in Canadian book production was *Rivers Among Rocks* by Ralph Gustafson. Some two dozen volumes of poetry appeared in French of which might be mentioned *La Chaude Loi des Hommes* by Jacques Godbout, *La Mouiette et le Large* by Jean-Guy Pillon, *La Belle au Bois Dormant* by Pierre Trottier, *Mémoire sans Jours* by Rina Lasnier and *Poèmes* by Anne Hébert.

Cultural Organizations

In addition to the Canada Council there are many important organizations engaged in the encouragement and promotion of the arts. A few of these such as the Royal Society, (founded in 1882 for the promotion of development in science and literature), and the Royal Canadian Academy of Arts, (founded in 1880), receive grants from the national treasury. Most of the groups, however, are financed and directed by private enterprise. One of the most active of these is the Canada Foundation. Among the more important professional cultural organizations maintaining membership in the Canadian Conference of the Arts are the Royal Architectural Institute of Canada, the Canadian Authors' Association, La Société des Écrivains Canadiens, the Federation of Canadian Artists, the Canadian Music Council, the Canadian Handicraft Guild, Canadian Guild of Potters, Canadian Group of Painters, Canadian Society of Painter-Etchers and Engravers, Sculptors Society of Canada, Canadian Society of Graphic Arts, Canadian Society of Landscape Architects and Townplanners, the Arts and Letters Club, the Canadian Ballet Association and the Canadian Society of Creative Leathercraft.

UNESCO

The Canadian National Commission for UNESCO was formed in 1957, as an agency of the Canada Council. The body is intended to act as a clearing house of information and a liaison between the many educational, scientific and cultural organizations in Canada and the UNESCO headquarters in Paris. The Commission also acts as an adviser on matters pertaining to the UNESCO program to the Department of External Affairs. On April 25, 1960, the Canadian Government named the first Permanent Delegate of Canada to UNESCO in Paris.



Like a bird in a cage, a technician and his camera are suspended over the studio floor. The only one of its kind in

North America, this camera is used for vertical shots such as the one of the famous Buchta Dancers.

Radio and Television

Radio and television service in Canada is complicated by geographical obstacles and bi-cultural requirements. Most Canadians inhabit a narrow strip across the southern portion of the country and the rest are scattered over many thousands of square miles. Nevertheless, radio is available to 98 p.c. of all Canadian homes and television to 93 p.c. Approximately one-third of the population is French-speaking.

Under the Broadcasting Act of 1958, the Board of Broadcast Governors regulates the establishment and operation of broadcasting networks, the activities of public and private broadcasting stations and the relationship between them, in the interest of providing a national broadcasting service of high standard, basically Canadian in content and character. While the Minister of Transport is the licensing authority under the Radio Act, the Broadcasting Act requires that applications for broadcasting station licences or for any change in an existing broadcasting station be referred to the Board of Broadcast Governors for its recommendation before being dealt with by the Department. Reasonably complete and technically acceptable applications are therefore referred to the Board of Broadcast Governors by the Department. Before such a licence may be issued, the approval of the Governor in Council is also required. With these exceptions, the technical control of broadcasting stations is carried out by the Telecommunications Branch of the Department of Transport.

A unique system of co-operation between public and private interests provides a national program service. The publicly-owned Canadian Broadcasting Corporation maintains 34 radio stations and 13 television stations from coast to coast. CBC programs are also fed to 101 privately-owned radio affiliates and 46 TV affiliates. Low power relay transmitters and satellite stations extend this service further into remote communities.

In radio, about 95 p.c. of the programs broadcast on CBC networks are Canadian-produced. In the more demanding and expensive medium of television, the balance is about 66 p.c. Canadian on the English network and approximately 76 p.c. Canadian on the French network.

In addition to its four radio networks—two English, one French and one FM (bilingual)—the CBC operates a Northern Service of eight standard band radio stations. In September 1960, this service was augmented by daily shortwave broadcasts across the whole of the North, beamed from the CBC's 50,000-watt transmitters at Sackville, N.B.

A regional radio network in the Yukon Territory is planned for the winter of 1960-61 when the Trans-Canada network will be extended to the banks of the Klondike, bringing radio service to three-quarters of the population of the Territory. A similar Trans-Canada network extension into the Northwest Territories is expected to be ready for use in 1962.

On April 4, 1960, the CBC embarked on an 18-month experiment in bilingual frequency modulation radio broadcasting, with the FM network linking existing Toronto, Ottawa and Montreal stations. Schedule planners have placed emphasis on music, popular and classical, live and recorded, but the network also carries news, talks and commentaries, and great dramatic works in both English and French.

With a hectic period of expansion ended, CBC television expects the development of regional contributions to the national TV network to be one of the more important operations of the future. The Corporation's new Edmonton TV station CBXT will commence operations in the late fall of 1961 and a network program exchange with this latest CBC television centre will result in the development of Alberta's TV resources. CBXT will be the only CBC television station in the 1,300 miles between Winnipeg and Vancouver, thus it will expand CBC television's geographical representation. Regional programming from the Alberta city will be in keeping with CBC policy of showing Canada to Canadians. New private TV stations have been licensed at Halifax, Montreal, Ottawa, Toronto, Winnipeg, Calgary and Vancouver.

Sports coverage by television has contributed to the intense interest Canadians exhibit in such series as the Stanley Cup hockey play-offs and the Grey Cup football games.





A CBC technician and a camera share the latest in transparent rainwear—a plastic hood designed to protect man and machine from bad weather during telecasting of outdoor events. Nearly 1,000 skilled technicians maintain and operate cameras and other electronic equipment in CBC's 18 production centres across Canada and hundreds are employed in private television stations.

Other countries have shown increased interest in CBC television productions and, in February 1960, the largest single export sale of programs in CBC history was completed. A British firm paid \$200,000 for a package of CBC-TV programs. The series "RCMP", in which the Corporation participated, was sold in the United States, Australia, Lebanon, and the Philippines.

Canadians have spent over \$1,200,000,000 to purchase TV sets since television came to Canada in 1952. In the same period, to provide programs for them to watch, the CBC has spent \$210,000,000 in public funds or about one-fifth the cost of the TV sets. More than 75 p.c. of all Canadian homes have television. The transmitters that serve them are part of the longest microwave TV network in the world, reaching 4,200 miles from CJON-TV in St. John's, Newfoundland, to CHEK-TV in Victoria, B.C.

The National Program Service. Most national programming originates in the five main production centres: Vancouver, Winnipeg, Toronto, Montreal and Halifax. Programs are planned both regionally and nationally as, for example, the local farm programs on CBC radio and television. The CBC produces approximately 100,000 radio and TV programs annually.

In addition to such a substantial amount of Canadian-produced programs, the national service includes outstanding programs from other countries. Some TV programs are fed directly from United States networks via the microwave relay. Film features produced in dozens of countries are also offered to Canadian viewers. Canadians see a few feet of film of special events which have taken place in Europe or Britain the same day through the improved "slow scan" process by which film for television can be transmitted across the ocean by wire. On May 6, 1960, program material recorded from the British Broadcasting Corporation's coverage of the wedding of Her Royal Highness Princess Margaret was flown by two RAF Vulcan jet bombers to the RCAF station at St. Hubert, P.Q., where a special CBC installation fed the videotaped program to its English and French networks and provided coverage to the major United States networks, NBC, CBS and ABC.

Through the immediacy of radio, live reports and complete programs from different parts of the world reach Canadians by direct line or recorded transcriptions every day. These are part of music, drama, public affairs and especially news programs.

The taste of the "average Canadian" would be impossible to assess by examining the programming on the national service. Some programs such as news, sports, national events, drama, variety and popular music have a very wide audience. Others are designed to interest a more specialized audience or serve a specific purpose. These include children's programs, and those devoted to women's interests, farm and fisheries, public affairs, as well as school broadcasts and religious programs.

Through CBC facilities, schools across Canada are provided with at least 30 minutes daily of broadcasts—some a part of the curriculum—specifically planned to meet classroom requirements in each province. The CBC also provides a great many broadcasts of interest to each particular region. An example is the fisheries broadcasts in the Atlantic Provinces—a service vital to that area but not heard in Ontario or the prairies. Time is allotted regularly for religious programming and free-time political broadcasts are arranged with the various federal and provincial parties. On radio a special "CBC Wednesday Night" program offers a full evening of the finest drama, music, documentary, talks, poetry and recitals. CBC television's "Festival 61", begun in the fall of 1960, brings drama, opera and special musical productions (e.g. "Julius Caesar", Verdi's "Falstaff", "H.M.S. Pinafore") to TV screens across the country. The programs in this series are mostly Canadian productions ranging in length from one to two hours.

In 1960, the CBC was honoured by the Institute for Education by Radio-Television at Ohio State University when it was presented with 18 first Ohio State Awards and honourable mentions out of a possible 32. CBC television programs which might be called "special appeal" programs have been measured as having had the following estimated average weekly national audiences during the 1959-60 winter season: "Close-Up", 1,400,000 viewers; "Newsmagazine", 975,000; "Country Calendar", 660,000; "Explorations", 578,000; and "Fighting Words", 425,000. These are examples of English-language programs which deliberately do not seek a mass audience, but which do attract specific interest groups of a size significant in a bilingual nation of some 18,000,000. The French TV network, which serves a potential audience roughly one-third that of the English network, drew these audiences for similar shows: "Téléthéâtre", 1,040,000; "Les Idées en Marche", 545,000; and "Travaux et les Jours", 450,000.

To retransmit the ceremony of the marriage of Princess Margaret to both French and English networks, this elaborate equipment was installed in airport buildings 20 miles south of Montreal.

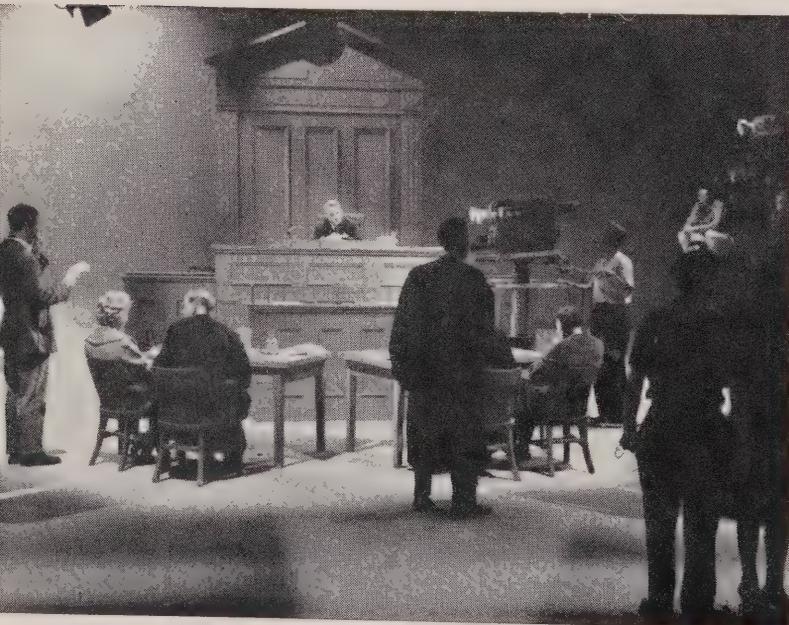


The uncertainty as to the future of radio which prevailed in the earlier days of television has now vanished. In recent years radio has established a place for itself in the life of Canadians which cannot be taken by any other medium. While the volume of nighttime radio listening has dropped, it has been replaced by more intensive listening, due to car radios, portable and smaller sets, and a continued high rate of daytime listening. In addition there are about 3,500,000 Canadians who still depend entirely on radio for broadcast services. The Canadian public still wants a good radio service. As evidence of their interest, Canadians bought 760,000 new radio sets in the twelve months ending March 31, 1960.

The CBC has found marked advantages in the use of videotape both in the quality of television recordings and in operational convenience and economy. In Montreal, for example, the Corporation was able to increase its 1959-60 output by 19 programs per week with no increase in studio facilities due to the planned use of videotape and scheduling changes. Through the use of videotape equipment at its modern relay centre in Calgary, CBC is able to give western viewers better service in terms of broadcast times and quality of delayed live programming.

Colour TV in Canada has remained a question mark largely because progress in the United States has been disappointingly slow. Nonetheless, CBC's newest and largest studios are designed for adaptation to colour transmission as is the nation-wide microwave network built by the communications companies; CBC engineers are keeping abreast of the latest technical developments.

CBC International Service. The International Service of the Canadian Broadcasting Corporation broadcasts news reports, commentaries, talks and other types of programs which tell listeners in other lands about life in Canada. The headquarters and studios are in the Radio-Canada Building at Montreal and the shortwave transmitters and antenna arrays are at Sackville, N.B. Programs are beamed to Eastern and Western Europe, Latin America, North America, the Caribbean area, Australia and New Zealand and are transmitted by shortwave directly to listeners in their own language. The broadcasts are



Summer replacement shows often try new techniques. In "Case for the Courts", presented during the summer of 1960, real judges and lawyers took part in fictional court cases which explained points of law applicable to everyday situations.

frequently heard in other parts of the world as well, notably in many parts of Africa. Some radio organizations in other countries rebroadcast the shortwave programs over their own facilities. Radio organizations throughout the world are provided with recorded programs on a regular basis or for special occasions.

In the field of transcriptions, the International Service offers broadcasting organizations music performed by Canadian artists, including Canadian folk, serious, popular and jazz music. Spoken-word transcriptions are provided in English, French and Spanish. A printed and illustrated program schedule is distributed periodically free of charge to listeners, and correspondence is invited. More than 420,000 letters, cards, and reception reports have been received since inauguration of the service in 1945. Replies are sent in the language of the listener and, upon request, are supplemented with printed and illustrated information about Canada.

The CBC International Service is fully financed through annual grants by Parliament.

Films

Film production in Canada has been growing steadily to help supply the increasing number of television stations across the country, in addition to providing hundreds of informational films for industry, government and education.

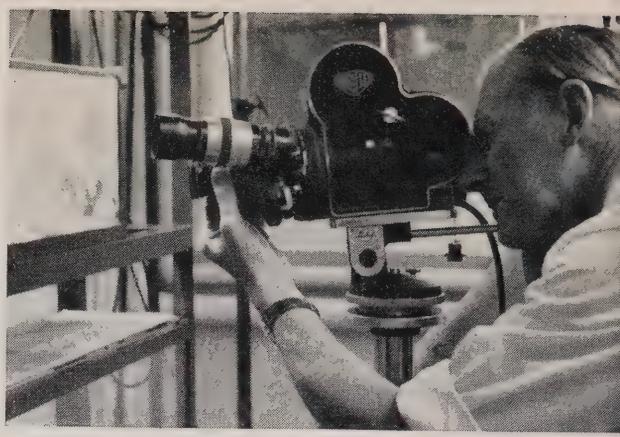
There are 54 film-making firms, plus seven government agencies. During 1959, they produced 34 theatrical shorts, 807 motion pictures for TV and non-theatrical purposes, plus a total of 4,507 other film items—TV commercials, trailers, newsreel stories, slidefilms, etc.

Canadian laboratories printed 47,978,205 feet of 16mm and more than 21,200,275 feet of 35mm motion picture film—enough to stretch from Halifax to Vancouver six times.



A scene from "Dialogue des Carmelites" presented on *Heure du Concert*, a French-network showcase for outstanding artists.

Photographing fish for a film made for use by science teachers.



The National Film Board.

The National Film Board was established by the Federal Government in 1939 in recognition of the growing importance of films and other audio visual material as an effective medium of information. Since that time the

Board has become well known in Canada and abroad as a national documentary film producing and distributing organization whose function is to interpret Canada to Canadians and to the people of other nations in an interesting and factual manner. That it has done so with distinction is evidenced by the fact that several hundred awards of Canadian and international significance have been made to NFB productions.

During the year ending March 31, 1960, the Board completed 353 motion pictures, including 96 originals, 99 revisions and adaptations, 60 foreign language versions, 48 newsreel stories and 50 other items.

NFB productions are shown throughout the world in commercial theatres, on television wherever it is in operation and to community audiences at home and abroad. Community showings in Canada reached an audience of 15,000,000 in 1959-60 and, in addition, an undetermined number of people saw NFB films purchased by film libraries, schools, industries and other organizations. During the year 16mm print sales totalled 3,589 in Canada and 3,829 abroad; 26,472 filmstrips were sold, 21,506 in Canada and 4,966 in other countries.

Abroad, Canadian films are distributed through many channels—through posts of the Departments of External Affairs and of Trade and Commerce, through deposits with state and local film distribution agencies, and through exchange agreements with various foreign governments. The reported total of the non-theatrical audience of Canadian films abroad in 1959-60 numbered 24,700,000.

There were 7,199 bookings of NFB films by theatres in Canada and 22,851 abroad. During the year NFB films were televised 4,210 times in Canada and 4,338 times abroad.



More than 15,000 people saw Canadian films in this Canadian pavilion at the Posnan International Trade Fair in Poland. Canadian films in foreign-language versions are shown and distributed on a free-loan basis by staffs of the 66 posts abroad of the Departments of External Affairs and of Trade and Commerce.

Education

Perhaps never before in Canada's history has education been under such close scrutiny both from within and from without. The physical problem of providing universal education for the young has grown tremendously, due to the sharp upturn in the birth rate following World War II, and costs have been spiralling at an even faster rate than population growth, thereby necessitating the search for more efficient methods to meet the greatly increased needs with the available resources.

In recent years, a number of royal commissions have been formed to inquire into various aspects of school administration. Royal Commissions on Education were established in 1957 or early in 1958 in Manitoba, Alberta and British Columbia. Final reports of the Manitoba and Alberta commissions were presented late in 1959, while the British Columbia report is still awaited. A Select Standing Committee reported on the state of education in Prince Edward Island in 1957, and, during the academic year 1959-60, Dr. M. E. Lazerte was appointed as a one-man commission to study education in that province. A Royal Commission on School Construction was held in Nova Scotia in 1958 and one on school financing in New Brunswick in 1954. In Saskatchewan a Royal Commission on Agriculture and Rural Life (1956-57) made a thorough investigation of the state of education in rural areas of that province. From these investigations have come many and detailed recommendations, a number of which are now being put into effect in several provinces.

Another indication of increased public attention in matters educational was the holding of a First Canadian Conference on Education, at Ottawa in February, 1958. This brought together some 850 delegates representing 84



In many provinces there are kindergarten classes within the school system for children of four and five.

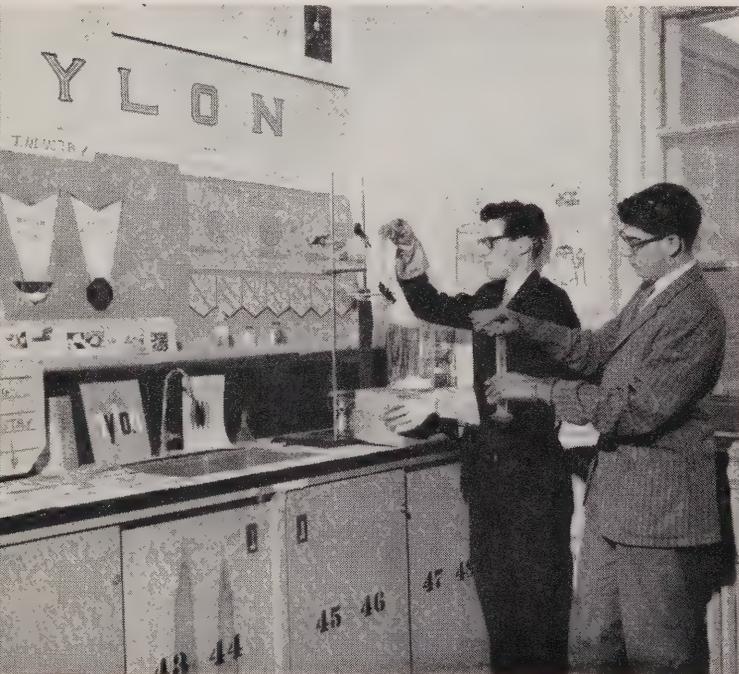
organizations having a total membership of close to 3,000,000 Canadian citizens. From it a continuing organization has developed, and plans have now been laid for a second such conference to be held at Toronto in 1962, to be preceded by an intensive study of certain aspects of education.

An event of some significance for Canada was the holding of UNESCO's 2nd World Conference on Adult Education at Montreal in August 1960, the general theme of which was "Adult Education in a Changing World". Some 200 delegates and observers from 49 countries and 46 international non-governmental organizations attended. The fact that Canada was selected as the venue for the Conference is perhaps a tribute to its progress in this field.

Such conferences and royal commissions play their part in directing attention to education and modifying the general form which it will take in the years ahead. But the backbone of education in Canada, as in any country, is the day to day activities taking place in the schools and colleges scattered across the length and breadth of the nation.

On any given week-day between September and June upwards of 4,000,000 boys, girls, young men and young women take their places in the classrooms and school laboratories of the nation. Their day's activities are directed by about 150,000 teachers and professors, while another 15,000 young men and women are in training for entering the teaching profession the following year. Thus, between one-fourth and one-fifth of Canada's population is directly involved in the nation's educational program.

A ubiquitous observer, peeping into these classrooms and laboratories on such a day, would note much similarity in physical equipment, course content, and methods of instruction at the various levels. He would also observe some wide extremes in facilities and some interesting new techniques in teaching methods. He would note, for instance, that most of the newer school buildings are low, spacious structures containing a number of bright, well-equipped classrooms, a gymnasium, one or more science laboratories or other rooms for special subjects, a central library, an auditorium, and sometimes even a swimming pool. Such buildings are found mainly in the larger urban centres,



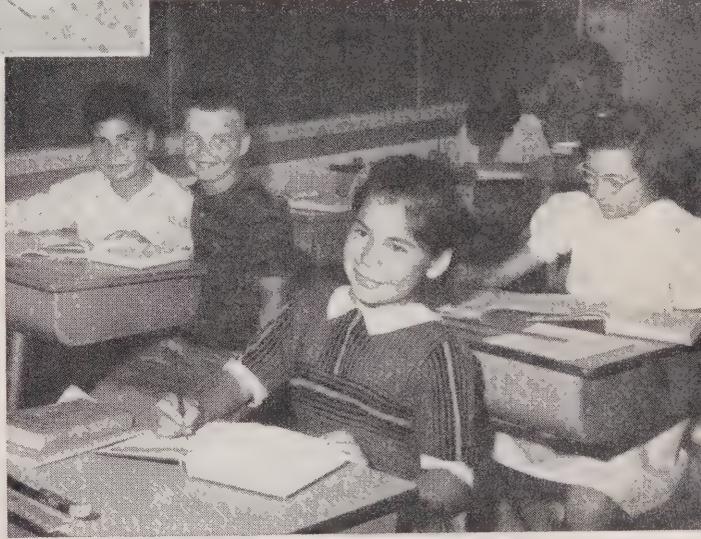
First started in 1959, science fairs have spread to many cities in Canada. These fairs provide opportunities for school children to show exhibits, demonstrations and collections in various branches of pure and applied science. The Canadian Science Fairs Council, formed by national professional, scientific, engineering and educational organizations, gives advisory assistance on starting and operating local and regional science fairs.



These Chinese children attend a private school after the regular school is over for the day, to receive language, religious and cultural education. Various other ethnic groups also provide special schools for their children.



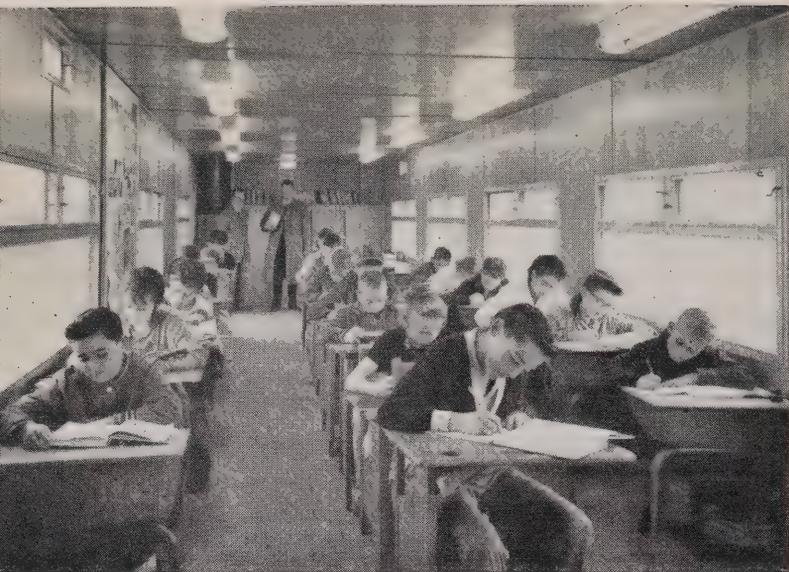
Indian children at the integrated Inuvik Federal School at Inuvik, N.W.T. Through the Northwest Territories there are now more than 50 schools provided by the Federal Government for all children, regardless of race. Staffed by 235 teachers, some of these schools have fully-equipped manual training workshops. In the Yukon Territory, its Department of Education operates public and separate schools.



but an increasing number are appearing in older, well-established rural areas. This type of modern school building can now be found even in Canada's far northern settlements, where Indian and Eskimo children receive their education under the direct responsibility of the Federal Government. The old one-room rural school, so familiar to the older generation, has not entirely disappeared, but it is becoming confined more and more to remote, lightly-populated areas.

Special provisions are made for the education of handicapped and other atypical children. Our ubiquitous observer would see blind children in six special schools being taught with the aid of Braille and in the larger cities some especially well-lighted classrooms where partially-sighted children read from books with extra-large type. He would also observe other physically-handicapped children being taught in separate classrooms provided with special equipment needed for their physical well-being. Some classes would consist entirely of slow learners with teachers trained for this type of pupil—others would consist of mentally bright students undertaking individual or class projects suited to their superior capabilities. Some teachers would be working to bring the benefits of education to children deprived of a normal home life—orphans, patients in sanatoria, and delinquent children in training schools and reformatories.

An observer would note the wide range of subjects taught and the variety of teaching methods employed in the instruction of Canadian children from kindergarten to college. He would see teenage boys learning the fundamentals of auto mechanics by working over actual machines, while girls would be



The interior of a mobile school. The school-trailer is completely fitted out with classroom equipment and living space for the teacher. Schools such as these are used at temporary construction sites or in new areas pending the building of permanent ones.

making their own dresses or hats. Some classrooms would be empty—the pupils away visiting museums or art galleries, or getting conducted tours of large industrial establishments. He would see some children learning to play musical instruments or gaining an appreciation of music by listening to hi-fi recordings, while others were getting instruction in public speaking, dramatics, or physical hygiene. In some classrooms the children would be listening to educational programs from classroom radios, while some classes might even be watching closed-circuit television programs. The great majority of the classes, however, especially in the smaller centres, are of the traditional type, where the classroom teacher conducts the lesson for a group of 20-35 boys and girls of approximately the same age in one of the fundamental subjects of reading, writing, spelling, English composition and literature, a foreign language, mathematics, science, history, geography, art, or music.

School activities are by no means confined to what takes place during school hours. After-school projects are of increasing educational significance, particularly at the secondary and college levels. Most large secondary schools have their camera clubs, stamp clubs, orchestras, bands, dramatic groups, etc., many of them supervised or directed by teachers.

One very popular activity of recent introduction to Canada, is the science fair. In some schools the science fair is becoming an annual project rivalling in importance and public interest the school concert. One or two provinces have even organized these fairs on a province-wide basis with valuable prizes offered for the winning exhibits, and nationally the Canadian Science Fairs Council was organized early in 1959 to promote and encourage the growth of the movement in Canada and to sponsor eventually a nation-wide competition.

Elementary and Secondary Education

In Canada's federal system of government, education is under the control of the provinces. Because of this decentralization, no uniform system has evolved. Each province has formulated school laws best suited to its needs, and, in many cases, individual municipalities have been permitted some freedom in developing their own types of schools or curricula within the general framework laid down by the provincial Department of Education.

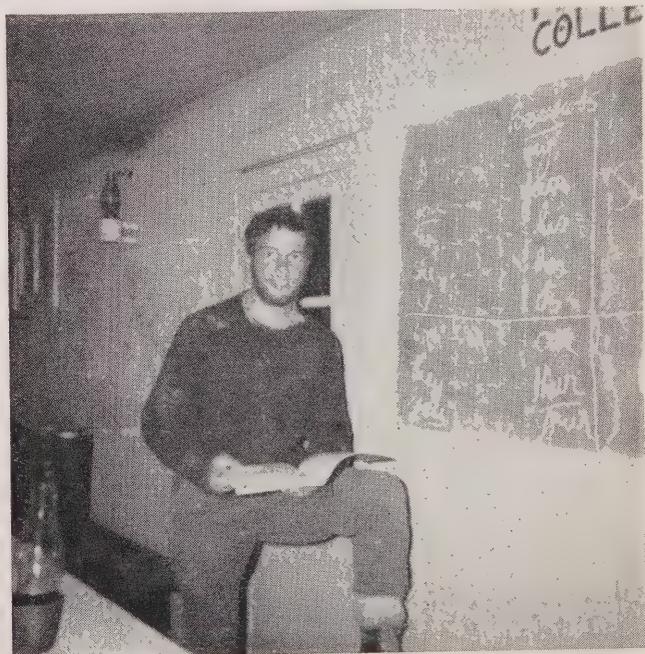
Nevertheless, certain regulations are common to all the provinces. School attendance is compulsory for all children generally aged 7 to 15 years, although there are some minor age variations in certain provinces. There are

three levels of education: (1) the elementary level, which takes care of the needs of children up to age 13 or 14; (2) the secondary level, which provides education for those in the middle teen-age years; and (3) the college or university level. Free schooling is provided from general taxation for children at the elementary and secondary levels. Local responsibility, which involves chiefly the building, maintenance and administration of schools, and the appointment and supervision of staff, is placed in the hands of a school board or board of education generally elected by and responsible to the citizens of the municipality or other local area. The main financial requirements of school boards are met partly by taxes levied by the municipality on private property, improvements to private property and businesses, and partly through provincial grants.

In general, elementary and secondary schools are non-denominational. However, some provinces have made provision for sizable Roman Catholic or Protestant minorities to set up separate schools at the elementary level for children of their own faith. In most respects these schools conform to the provincial and local regulations regarding content of courses, qualifications of teachers, etc. Parents who support the separate schools do not contribute to the regular public schools. In Quebec a dual system operates from the provincial department down—one branch dealing with Roman Catholic, the other with Protestant schools. The former is further subdivided into separate sections for French-language and English-language schools. Newfoundland continues to operate with public schools for the numerically large denominations—Anglican, Pentecostal, Roman Catholic, Salvation Army, Seventh Day Adventist, and United Church—as well as some inter-denominational and non-denominational schools.

About 170,000 school children, mostly from Quebec, are enrolled in private schools. These often have a more varied curriculum than the public schools, but generally provide the basic subjects necessary for admittance to most universities. Some are operated by religious or other organizations, others are run as private business concerns; some operate as day schools,

In a dozen remote sites of mining or hydro-electric development, Frontier College carries on a program of adult and vocational education through its labourer-teachers who live and work in the camp during the day and offer classes in the evening. Frontier College also carries out a vocational guidance and job-finding service for its students.



others are boarding schools, while some are a combination of the two. Annual fees may range anywhere from \$50.00 to \$2,000. Prominent among the private schools are the classical colleges of Quebec, which are affiliated with the universities and whose graduates obtain a degree in Arts. These provide an eight-year course from the end of elementary school, the first four years of which are equivalent to an academic high school course. There are about 70 such colleges in Quebec with a total enrolment at the high school level exceeding 20,000, about one-fifth of whom are girls.

Higher Education

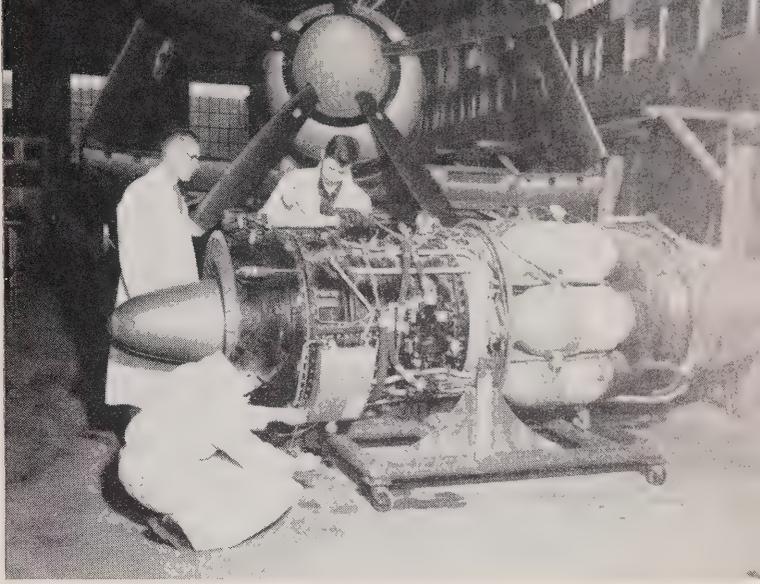
There are about 350 universities and colleges in Canada, including the classical colleges of Quebec. The majority are small, private, church-affiliated or non-denominational colleges which do not grant degrees in their own right, being affiliated with degree-granting universities. There were, at the start of the 1960-61 academic year, 45 active degree-granting institutions in the country, including eight which held some or all degree-conferring powers in abeyance while in association with other universities, and excluding 16 that granted degrees only in theology. The majority of the provinces have established provincial universities, and all provinces provide some grants for higher education.

Enrolment of full-time students in Canadian institutions of higher education has been increasing sharply in recent years and at December 1, 1960 was estimated at 114,000, nearly 12 p.c. larger than in the preceding year. If the present trends continue, the enrolment will double within the next ten years, and many officials are making plans to cope with the expected influx. In 1958-59 over 17,000 bachelor and first professional degrees were granted. The largest number were in arts and science (7,576), engineering (2,057), education (1,749), and commerce and business administration (1,007). For the same academic year 1,688 master and licence degrees and 284 earned doctorates were awarded, as well as 303 honorary doctorates.

Chipman House, a new residence for men at Acadia University, Wolfville, Nova Scotia, was officially opened in November, 1960. Half of its total cost of \$625,000 was financed through a grant from the Canada Council.



The Alberta Institute of Technology and Art is the only school of aeronautics in Canada recognized by the Federal Government as authorized to rebuild, repair and overhaul commercial aircraft and engines. It provides vocational courses in aircraft maintenance and engineering technology. Total full-time enrolment in the 29 Canadian institutes offering post-secondary technical courses reached 9,443 in 1960-61.



Vocational Education and Training

Canadian industrialization and its newest technological offspring, automation, require an increasing volume of skilled manpower. In addition, the skills required are becoming on one hand more and more complex and on the other hand more specialized. Management, labour and governments are keenly aware of this pressing need and steps are now being taken toward the setting up of new establishments and the expansion of existing facilities.

In 1959 British Columbia opened a new vocational school at Burnaby and have plans for another one at Prince George. Alberta has enlarged the premises and scope of its Trade and Technical Institute at Calgary and plans call for a new one at Edmonton. Saskatchewan opened its new Trade and Technical Institute at Moose Jaw. Manitoba has blueprints for a new trade and technical institute at Winnipeg. Ontario continues to add to the capacity of its technical institutes, to the programs offered, and to its high school vocational courses. Quebec opened the Laval Institute of Technology at Montreal. New Brunswick opened a new Trade and Technical Institute at Moncton and has plans for several trade schools throughout the province. Nova Scotia is scheduled to make a beginning on a trade and technical institute, and Newfoundland has a College of Trade and Technical Training presently under construction at St. John's.

In recent years the Federal Government has been playing an increasing part in the financial support of higher education. As well as operating three military colleges (including one bilingual college), the Federal Government since the 1951-52 academic year has offered annual operating grants to universities and colleges. For 1959-60 some \$26,112,000 was authorized under this scheme. Another large federal contribution is through the Canada Council for the Arts, Humanities and Social Sciences. The Council was granted \$100,000,000, half of which is for distribution to Canadian institutions of higher education over a 10-year period for specific building or capital equipment projects. Interest on the remaining \$50,000,000 is being used to assist the development of the arts, humanities and social sciences through graduate scholarships and other awards in these fields. In addition, federal agencies such as the National Research Council, the Defence Research Board, and the Department of National Health and Welfare, contribute to various scholarship schemes and to scientific research projects in the universities.



About one adult in 25 in Canada enrolled in an adult education course or class in 1959-60. About 42 p.c. of the courses were vocational; 14 p.c. were subjects leading to a university degree or high school diploma; the remainder were in general and cultural subjects. Sponsorship of these courses was almost equally divided between public (including universities) and private agencies.

The last decade has been marked by an unprecedented and unparalleled increase in enrolment in the vocational and technical fields. During 1960 there were almost 20,000 indentured apprentices registered with the provincial Departments of Labour, as compared with 9,500 in 1950. Full-time enrolment in the pre-employment courses at the trade level reached 16,000 pupils in 1960, a three-fold increase over the number registered ten years ago. In 1950 some 20,000 high school students were enrolled in vocational courses as compared with 110,000 in 1960. The post-secondary level technical programs attracted almost 10,000 full-time students as compared with 2,500 in 1950. In addition to these publicly operated training programs, apprenticeship plans are being conducted by private industry, and trade and business training is carried on in private institutions.

The Federal Government assists considerably in this development. Whereas vocational and technical education remains basically a provincial responsibility, the Federal Government shares the cost of operation and construction of vocational training facilities. Its financial involvement goes back to the twenties and the thirties when the cost of vocational youth training was first shared by the provinces and the Federal Government. During World War II and immediately after, training of specialists and veterans was considered as being also a federal responsibility and therefore the Federal Government contributed to its cost. The Vocational Training Coordination Act of 1942, together with specific agreements signed by most of the ten provinces, established federal contributions towards vocational training, both for capital and operational expenditures. Generally speaking, the Federal Government matched provincial contributions dollar for dollar up to a budgeted allotment. A variety of programs was covered by these agreements, such as the vocational training of unemployed, physically handicapped, foremen and supervisors, primary industry workers, armed forces' tradesmen and vocational high school students.

In December 1960 a new Technical and Vocational Training Assistance Act was passed in the House of Commons, replacing the Act of 1942. The share of the Federal Government has been increased to 75 p.c. for capital expenditure contracted for the establishment of trade and technical schools and the quota limit has been removed, provided that the approved construction of new facilities is completed by the end of the fiscal year 1962-63. The federal share of expenditure for the training of unemployed has also been set at 75 p.c. However, a fixed minimum number of trainees has been set

before this share can be applied. Presently, all ten provinces participate in the latter program. In December 1960 Quebec signed its Agreement covering the unemployed, for the first time since 1954.

It is reasonable to assume that increased federal assistance together with the manifest interest of the provinces will result in an even more accelerated pace in Canadian vocational education and training in the years to come.

Statistics of Canadian Education, School Year 1958-59

Type of School or Course	Total for Canada		
	Schools	Teachers	Enrolment
	No.	No.	No.
Full-Time Courses			
Elementary and Secondary Education:			
Public and separate schools ¹	27,627	137,854	3,633,740
National Defence schools (overseas).....	15	262	5,845
Indian schools ²	453	1,209	29,868
Schools for the blind.....	6	93	624
Schools for the deaf.....	9	234	1,860
Private schools.....	1,174	8,362	161,689
Higher Education:			
University grade.....	339	6,610	94,400
Teacher Training:			
Teachers' colleges.....	119	1,055	14,825
Faculties of education.....	3	3	3
Vocational Education:			
Trade courses (apprenticeship).....	—	—	8,864
Trade courses (pre-employment).....	—	—	14,380
High schools.....	4	4	4
Technical institutes.....	27	800	7,414
Private business colleges.....	275	1,153	19,511
Total full-time education.....	30,044	157,632	3,993,020
Part-Time Courses (Adult)			
Publicly-operated:			
Academic.....	—	—	64,381
Vocational.....	—	—	185,293 ⁵
Other (social, cultural, etc.).....	—	—	124,560
Universities and Colleges:			
Academic, for credit toward a degree.....	—	—	54,458
Other (extension, etc.).....	—	—	88,603
Private business colleges.....	—	—	24,662

¹ Includes schools in the Territories administered by the Federal Government.
² Day, residential and hospital schools administered by the Federal Government.
³ The 24 faculties employing 253 full-time teachers and professors and enrolling 6,461 students included under "Higher Education".
⁴ The vocational, technical, commercial and composite high schools enrol about 100,000 pupils in vocational courses included under "Public and Separate Schools".
⁵ 1957-58 enrolments.

Adult Education

Adult education classes are provided and assisted by universities and colleges, government departments and agencies, local school boards, public libraries, employers, business colleges and a large number of independent, voluntary organizations.

More than 40 universities and colleges reported, in 1957-58 and in 1958-59, yearly enrolments of about 130,000 in classes and courses of which nearly

40,000 were for credit toward a university degree or diploma. For every two full-time day students enrolled in the universities surveyed, there was one adult enrolment on a part-time basis for work toward a degree. Enrolment in non-credit professional training and refresher courses, especially in business and medicine, was next highest, followed by social education, including such unique topics as the operation of co-operatives and family life education.

In addition to the provincial Departments of Education, provincial Departments of Health, Agriculture, Forestry, Fisheries, Highways, Labour and Reform Institutions and several federal government departments were concerned with adult education. All told, nearly 40 of these reported a wide variety of activities, ranging from formal, in-service training to productions of the Canadian Broadcasting Corporation and the National Film Board, many of which were designed to provide information and cultural experiences for adults. Night schools, operated by local school boards, recorded enrolment of about 400,000 in classes and courses. More than half of this enrolment is in vocational classes, almost one-fifth was for credit toward a high school diploma, and the balance was in general social and cultural education. Outstanding was the program of English and citizenship classes for New Canadians offered in most large centres and assisted by provincial and federal government grants.

Public libraries, in addition to supplying about 4,000,000 books which circulated among adult borrowers more than 12,000,000 times in 1959, sponsored classes and courses in fine arts, literature, etc., with total enrolment of 6,066 in 1959.

As well as classes and courses, universities and colleges, government agencies and public libraries sponsored more than 20,000 public lectures, film showings, exhibits, and musical and dramatic performances, with total attendance of about 2,000,000.

Private business colleges provided part-time day and evening classes and correspondence courses for 24,662 adults in 1958-59.

About one adult in 25 took part in an adult education class or course in Canada. There were more men than women taking such courses and the median age for all reporting was 31 years, as compared with a median age of 37 for the total population 14 years of age and over.

Publicly-supported night schools, academic or vocational, sponsored more than 26 p.c. of the courses reported. Universities and colleges offered 15 p.c. of the courses, and other publicly-operated courses accounted for about 11 p.c. Private schools, academic and vocational, sponsored more than 18 p.c., and private organizations and associations, including churches, employers, YMCA, YWCA, and many others, operated the remaining 30 p.c.

Vocational courses represented about 42 p.c. of those taken, and were almost equally divided between business and trade or technical subjects. Courses in subjects leading to a university degree or high school diploma accounted for about 14 p.c. The remainder of the courses were in general or cultural subjects, such as languages, current affairs, art, drama, music, etc. and were not taken for credit toward a degree or diploma.

Of all the courses reported, 15 p.c. were correspondence courses, and 85 p.c. were attended. About one person in every 11 took two or more courses during the period under survey.



Libraries

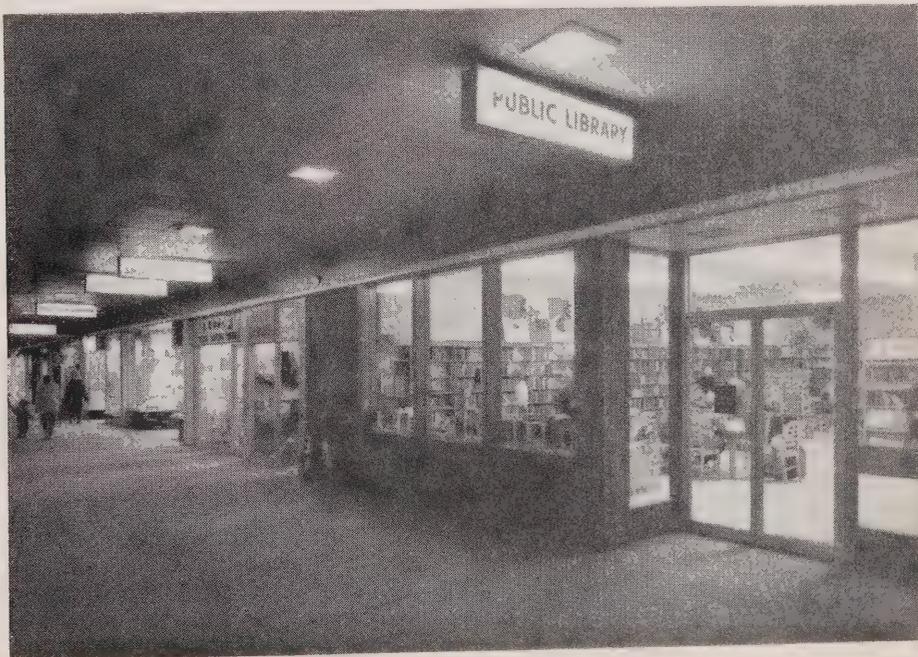
Good news for libraries came from the four degree-granting library schools in Canada, which graduated a total of 107 librarians in 1960 as compared with an average of 80 per year during the preceding five years. Shortages of professional staff have created serious problems in all types of libraries, affecting existing services and much needed development. For example, in the larger public libraries alone, more than 350 librarians with partial or no professional training were employed in professional positions in 1958. Some years of increasing enrolment in the library

schools will be needed to fill the accumulated demand for trained, professional librarians.

Government agencies, individual libraries and others offer a number of scholarships and awards for studies in library science, and one in four of the graduates was receiving aid of this kind. The largest group of graduates—41.6 p.c.—took positions in public libraries, 38.6 p.c. went to university libraries, 13.9 p.c. to special libraries and 5.5 p.c. to school libraries. The average and median beginning salary of the graduates reporting was \$4,400, the highest on record.

The first joint conference in 30 years of the Canadian Library Association and the American Library Association took place in Montreal, in June, 1960, with nearly 5,000 delegates attending.

Provincial legislation was passed in Quebec in December, 1959 providing for a study of library facilities with a view to regional organization. Provision has also been made for regional library organization in northern areas of Canada, in the Yukon Territory with the assistance of a Canada Council grant



Branch libraries are moving out to suburban districts. Four cities in Canada now have branch libraries in shopping centres.

and in the Northwest Territories under the Department of Northern Affairs and National Resources. Thus public library development in all areas of the country is now assured of interest and support from provincial and territorial authorities.

In 1959 there were 148 libraries in 142 urban centres of 10,000 population and over, 34 regional and co-operative libraries, and 12 provincial public library agencies. These libraries served a population of 13,048,437, provided 10,420,655 volumes, which circulated about 4.31 times each, spent an average of \$1.27 per person served and maintained staffs of nearly 2,500 full-time employees. In addition, about 700 independent municipal and association public libraries in smaller centres served nearly 1,500,000 persons. New suburban and rural areas are being served by an increasing number of book-mobles and other mobile units, as a first step toward more complete public library services.

The National Library. The National Library, formally established in 1953, publishes *Canadiana*, a monthly bibliography of books, pamphlets and music published in Canada or relating to Canada and including federal and provincial government publications; maintains the National Union Catalogue; and is building an extensive general collection of books with special emphasis on the humanities, music and the social sciences.

During the fiscal year 1959-60 *Canadiana* listed 9,230 separate items in library cataloguing form and was used extensively in Canada and abroad.

The National Union Catalogue includes about 4,500,000 entries, listing volumes in 160 important Canadian libraries, and is kept up to date by reports of new accessions. Libraries of all kinds, in Canada and abroad, use this catalogue to locate books for inter-library loan purposes. During 1959-60, 9,691 enquiries were received.

The National Library lends its books (other than the reference collection) to libraries across the country for the use of their patrons. The collection now in use includes nearly 350,000 books, microcards and microfilms, but is limited by lack of space and facilities, while housed in temporary quarters.



Asian students graduating from the McGill University Library School where they studied under Colombo Plan auspices. Close to 6,000 foreign students from more than 100 countries attended Canadian universities and colleges during the 1958-59 academic year.

Health

The great growth which occurred during the decade just ended in Canadian health and welfare services has extended and strengthened the traditional patterns of co-operation between the public and the voluntary agency. The health and social work and allied professions, the hospitals, public health and welfare departments and the voluntary agencies have all responded in full measure to such challenges as the great expansion in population, the unprecedented growth of urban communities and the increasing numbers of older persons. As well, they have met and solved many of the problems inherent in mid-century objectives of extending to all Canadians, wherever they live, the basic services required to promote acceptable health levels and a way of life freed from the economic hazards of disability or age and of loss of earnings from other causes outside their control.

The substantial building of basic preventive care and rehabilitation services across the country and the federally supported provincial hospital insurance schemes in all provinces have done much to raise general health levels in all age groups. The different income security programs—Old Age Security, Unemployment Insurance, Old Age Assistance, Blindness and Disability Allowances, Workmen's Compensation and the different provincial social assistance programs which are assisted through federal unemployment assistance grants—have brought some measure of aid to those whose needs for help are greatest. Family allowances continue to benefit an increasing number of families with young children. Provincial welfare services, despite rising costs and chronic staff shortages, increased both in extent and effectiveness throughout the decade.

The expansion of government services has been paralleled by an equally significant development in the voluntary field. Relieved of much of the financial burden of providing maintenance, voluntary agencies have been in a better position to develop other types of essential community service, both those that are broadly preventive and those designed to aid people in dealing with problems of adjustment and relationship in time of individual or family crisis. Services have been expanded and improved in family welfare and child welfare, including specialized institutional care of children, social work in hospitals and clinics, programs for the aged, correctional care, rehabilitation and recreation. Community chests and united appeals in some 107 areas unite the financial campaigns of welfare, health and recreation



With the aid of rehabilitation equipment and services, this young polio victim can hope to achieve her maximum potential recovery.

agencies, and welfare or social planning councils are promoting the development, co-ordination and use of community resources in more than 45 Canadian cities and regions.

Generally it can be said that health and welfare services in Canada have developed strength without sacrificing flexibility, and effectiveness without sacrificing the freedom of the individual.

The problems yet to be overcome sometimes obscure the progress that has been made. The full implications of large scale unemployment in a prosperous economy are not yet known nor sure methods found for curing it. The concern expressed by many since the war years as to the physical fitness of the average Canadian has been increasing. Those responsible for the prevention of delinquency, for parole and probation services have continued to strive for more effective action to prevent the causes of delinquency and to rehabilitate the offender and make his reintegration into society easier. There has been mounting concern over the problems presented by our growing numbers of older persons and their health and welfare needs. The toll of highway accidents has remained far too high, despite increased educational measures. Deaths from cancer, among the young as well as among older persons, have tragically emphasized the need for still further research in this field. The extent of diseases of the heart and respiration system continued to be a major problem.

But what awaits solution does not detract from what has been accomplished, the progress that has been made in eliminating the oppressive and continuing poverty among large segments of the community that had persisted, in Canada as in other countries, from the first days of industrialization to the Second World War, in cutting back the death toll from the communicable



On Dec. 19, 1960, Quebec signed a federal-provincial hospital insurance agreement, bringing all ten provinces under the scheme. Quebec's hospital insurance plan went into effect on January 1, 1961.

diseases, particularly from tuberculosis, and in generally raising health and welfare standards and conditions.

Nor does it detract from the heartening growth in the last ten years of concern for the welfare and the health of persons in the under-developed countries of the world, an interest that has been translated into aid to many countries through Canada's participation in the work of WHO and other UN agencies and through the Colombo Plan and other Canadian aid programs which have been established in recent years.

Health Services

The health professions, the hospitals operated by the community, by religious orders and by the various levels of government, public health, welfare and other departments, and the voluntary and research agencies all play their part in the development and administration of health services in Canada.

The Federal Government has a number of statutory and other obligations in health work which are carried out largely by the Department of National Health and Welfare, with the Medical Research Council, the Department of Veterans Affairs and the Dominion Bureau of Statistics also having important health responsibilities. Through the National Health Grants Program, the Hospital Insurance and Diagnostic Services program and a wide range of advisory and co-ordinating services, the Department of National Health and Welfare assists the provinces in developing and administering the general health and hospital services for which they are responsible. Federal food and drug legislation administered by the Department provides a fundamental protection in the day-to-day life of every Canadian. Federal health services for Indians and Eskimos are bringing their health levels up to those of other Canadians.

The health and hospital services administered by the provinces are wide ranging, with new functions in the field of hospital insurance having been added in the last years of the decade to the provision of public health services either directly or in co-operation with the municipality. In the constant breaking of new ground and building of new services the voluntary agency has continued its traditional role through the decade. One of the most spectacular and effective examples of this progress has been the work of the different organizations established to aid the retarded child.

Services administered by the provinces and municipalities, with the aid of federal grants and the support of voluntary agencies, include:

Hospital Services. Provincial hospital insurance plans administered under the Hospital Insurance and Diagnostic Services Act of 1957 are designed to achieve a high level of care and include a comprehensive range of services. Standard ward accommodation is provided under all plans, with semi-private or private care being available at extra cost. Nursing services and drugs and biologicals are also provided for in-patients together with surgical supplies, use of operating and case room, x-ray and laboratory procedures and the use of radiotherapy and physiotherapy facilities where available. Insured services for out-patients vary between provinces. Tuberculosis and mental care institutions are excluded under the federal-provincial program, though Ontario and Prince Edward Island include these services in their plans and other provinces provide them under special programs.

Bed Capacity of Hospitals (Public, Private and Federal) Operating in Canada, by Province, as at Dec. 31, 1959

(Excluding bassinets)

Province and Category of Hospital	General		Mental		Tuberculosis		Other		Totals	
	Beds	Per 10,000 Popu- lation ¹	Beds	Per 10,000 Popu- lation ¹	Beds	Per 10,000 Popu- lation ¹	Beds	Per 10,000 Popu- lation ¹	Beds	Per 10,000 Popu- lation ¹
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Newfoundland—										
Public.....	1,868	41.6	835	18.6	550	12.2	92	2.0	3,345	74.5
Private.....	—	—	—	—	—	—	—	—	—	—
Federal.....	43	1.0	—	—	—	—	—	—	43	1.0
Prince Edward Island—										
Public.....	659	64.6	528	51.8	110	10.8	31	3.0	1,328	130.2
Private.....	—	—	—	—	—	—	—	—	—	—
Federal.....	—	—	—	—	—	—	—	—	—	—
Nova Scotia—										
Public.....	3,367	47.0	2,713	37.9	515	7.2	172	2.4	6,767	94.5
Private.....	16	0.2	—	—	—	—	—	—	16	0.2
Federal.....	750	10.5	—	—	—	—	7	0.1	757	10.6
New Brunswick—										
Public.....	2,852	48.3	1,331	22.6	761	12.9	201	3.4	5,145	87.2
Private.....	—	—	—	—	—	—	—	—	—	—
Federal.....	587	9.9	—	—	—	—	19	0.3	606	10.3
Quebec—										
Public.....	22,365	44.7	17,815	35.6	3,464	6.9	8,701	17.4	52,345	104.7
Private.....	811	1.6	—	—	—	—	1,906	3.8	2,717	5.4
Federal.....	2,690	5.4	513	1.0	—	—	31	0.1	3,234	6.5
Ontario—										
Public.....	27,652	46.5	18,993	31.9	3,400	5.7	3,915	6.6	53,960	90.7
Private.....	751	1.3	333	0.6	—	—	1,309	2.2	2,393	4.0
Federal.....	3,781	6.4	841	1.4	—	—	150	0.3	4,772	8.0
Manitoba—										
Public.....	4,403	49.8	3,405	38.5	608	6.9	503	5.7	8,919	100.8
Private.....	56	0.6	—	—	—	—	56	0.6	112	1.3
Federal.....	1,099	12.4	—	—	365	4.1	—	—	1,464	16.5
Saskatchewan—										
Public.....	5,998	66.5	3,190	35.4	662	7.3	515	5.7	10,365	114.9
Private.....	—	—	—	—	—	—	14	0.2	14	0.2
Federal.....	170	1.9	—	—	—	—	60	0.7	230	2.5
Alberta—										
Public.....	7,532	60.6	4,503	36.2	600	4.8	716	5.8	13,351	107.4
Private.....	75	0.6	—	—	—	—	56	0.5	131	1.1
Federal.....	1,245	10.0	—	—	—	—	70	0.6	1,315	10.6
British Columbia—										
Public.....	8,234	52.4	5,709	36.4	417	2.7	157	1.0	14,517	92.5
Private.....	222	1.4	73	0.5	—	—	1,811	11.5	2,106	13.4
Federal.....	1,437	9.2	—	—	558	3.6	259	1.6	2,254	14.4
Yukon and Northwest Territories—										
Public.....	619	182.1	—	—	—	—	—	—	619	182.1
Private.....	21	6.2	—	—	—	—	—	—	21	6.2
Federal.....	102	30.0	—	—	—	—	—	—	102	30.0
Canada—										
Public.....	85,549	49.0	59,022	33.8	11,087	6.4	15,003	8.6	170,661	97.8
Private.....	1,952	1.1	406	0.2	—	—	5,152	3.0	7,510	4.3
Federal.....	11,904	6.8	1,354	0.8	923	0.5	596	0.3	14,777	8.5

¹ Based on population as at June 1, 1959.

A public health nurse, employed by the Federal Government, visits an Eskimo home, accompanied by an Eskimo woman who acts as interpreter.



Public Health Services. Comprehensive provincial public health programs include environmental sanitation, communicable disease control, child and maternal health, health education, vital statistics, public health laboratories, occupational health, dental public health and nutrition services. Provincial and local governments co-operate closely in providing services to the community. The autonomy of the provinces in health matters and their social, economic and geographic diversity result in considerable variety in services in different provinces and in the division of responsibilities between the two levels of government.

Mental Health Services. The wide field of mental illness constitutes the largest single special medical and hospital problem in Canada. In 1958 the total operating cost of mental hospitals was \$96,300,000. In 18 of the large active treatment hospitals for the mentally ill, covering seven provinces and having a resident population of about 25,000, the number of patients in open wards has increased from about 1,000 since 1954 to nearly 10,000. While hospital care is the highest single item of expenditure of all the mental health services, the cost of treatment outside hospitals, provided through clinics and after-care centres, day hospitals, privately-sponsored community schools for the mentally retarded, together with the amounts spent on research and training of mental health personnel, add many more millions to the total cost.

Bolder and more vigorous experiments are being introduced in hospital treatment. More extended use is being made of open wards where patients are free to move at will and, in some hospitals, leave the grounds without supervision. Many institutions encourage use of week-end privileges and holidays with families and relatives. Valuable assistance in the development of recreational activities for patients has been provided through the volunteer visiting service organized by community groups of the Canadian Mental Health Association.

More community services are developing for patients who can be treated at home or who need a short period of in-patient care. Psychiatric units in general hospitals and community clinics are admitting increased numbers of patients.

Perhaps the greatest advance in services for any one group of the mentally afflicted has been in services for the mentally retarded. Through the

efforts of parents of retarded children, community associations for the retarded have been formed in nearly 200 centres and in less than a decade these groups have succeeded, with assistance of provincial grants, in setting up a widespread system of training centres and classroom facilities for the educable or less seriously retarded remaining under home supervision. In 1958 the provincial organizations were federated to form the Canadian Association for Retarded Children.

The Physically Disabled and the Chronically Ill. Significant advances have been made in the treatment of crippling disabilities and chronic illness during the past decade. Certain disease conditions which often led to permanent disability, such as poliomyelitis and tuberculosis, have responded to effective means of control. Although prevention and successful treatment of many others remains a challenging problem, therapy and rehabilitation provided through voluntary and governmental agencies have enabled many patients to be helped with their handicaps.

Through these co-ordinated programs, the disabled who have no resources to meet all or part of rehabilitation costs may be assisted with medical assessment and treatment, prosthetic appliances, out-patient physical, speech and occupational therapy, rehabilitation equipment such as wheel-chairs, transportation and vocational training. Rehabilitation services in general hospitals are expanding and separate medical rehabilitation centres have been established in most provinces. Four of these centres are operated by provincial Workmen's Compensation Boards which have experimented in methods of physical and vocational rehabilitation.

Important progress has been made in the care of young handicapped children with the assistance of crippled children's organizations. To facilitate early correction of abnormalities, registers of handicapped children have been established in several provinces. All provinces make some provision for the education of handicapped children such as the blind, the deaf, the mentally retarded and the physically handicapped in general, either through the operation of special schools or by financial grants.

Because most chronic illness is found among the aged, a good deal of study is being given to health needs of elderly persons. Programs for speeding up the development of adequate hospital facilities for chronic patients supplemented by home nursing projects are being developed in several provinces.



The therapy pool in the Toronto General Hospital. In 1959 there were 1,503 hospitals in Canada, of which 1,092 were public, 338 were private and 73 were owned by the Federal Government.

Welfare

All levels of government are concerned with maintaining the incomes of persons who become dependent on the community. In addition, family allowances are designed to provide a special measure of aid to families with young children. Family allowances, old age security and unemployment insurance are administered by the Federal Government. Other major programs are the administrative responsibility of the provinces, in some cases with federal assistance.

Family Allowances. Family allowances are paid, normally to the mother, for children under 16 years of age who have been resident in Canada for one year. Allowances are paid by the Federal Government from general revenue,

involve no means test and are not considered income for tax purposes. They are paid at the monthly rate of \$6 for children under 10 years and \$8 for children 10 to 15 years of age. An allowance of \$60 a year is paid on a quarterly basis for each child under 16 years of age supported by an immigrant who has landed for permanent residence in Canada or by a Canadian returning to Canada to reside permanently. It is paid for a period of one year, until the child is eligible for family allowances.

Old Age Security. A pension of \$55 a month is paid by the Federal Government to all persons aged 70 or over who have been resident in Canada at least ten years. It is financed through a 3-p.c. sales tax, a 3-p.c. tax on net corporation income and, subject to a maximum limit of \$90 a year, a 3-p.c. tax on individual net taxable incomes.

The provinces of Alberta, British Columbia and Saskatchewan make supplementary payments to recipients of old age security who qualify under a means and residence test, and Ontario shares in additional relief payments made to recipients by the municipality. In the remaining provinces and territories, recipients of the pension may be eligible for additional assistance under the terms of social assistance legislation.

Unemployment Insurance. The Unemployment Insurance Act provides for a co-ordinated program of unemployment insurance and for an employment service through offices of the Unemployment Insurance Commission across Canada. In general, all employed persons, with certain excluded occupations such as agriculture (with minor exceptions), domestic services and school teaching, are insured irrespective of length of residence, if their annual earnings do not exceed \$5,460. Additional information giving rates of contribution and benefit as well as the operations of the service are given on pp. 170-1.



During the month of January, 1961, letter carriers delivered cheques to the value of \$42,588,041 to the mothers or guardians of 6,369,359 children.



An experiment in the use of "traffic audio-lights" has been tried out in Edmonton, Alberta. A fast "beep" tone, synchronized with the lights, means it is safe to cross north and south, and a slow "beep", east and west.

Old Age Assistance, Disabled and Blind Persons Allowances. Assistance of up to \$55 a month is paid under the Old Age Assistance Act to needy persons aged 65 to 69 years; under the Disabled Persons Act to those 18 years of age or over who are totally and permanently disabled; and under the Blind Persons Act to blind persons aged 18 or over. In each case there is a residence requirement of ten years, and the allowance is subject to a means test.

For old age assistance and disability allowances, total annual income may not exceed \$960 for a single person, \$1,620 for a married couple and \$1,980 for a married couple, one of whom is blind. For blindness allowances it may not exceed \$1,200 for a single blind person, \$1,680 for an unmarried blind person caring for a dependent child, \$1,980 for a married couple when one spouse is blind and \$2,100 for a married couple when both are blind.

Programs are administered by the province; the Federal Government reimburses the province for one-half the costs of old age assistance and disability allowances and for three-quarters of those of blindness allowances.

The provinces of Alberta, British Columbia and Saskatchewan make supplementary payments, subject to income and residence tests, to recipients of blindness allowances, Alberta and British Columbia to recipients of old age assistance, and British Columbia to recipients of disability allowances. Ontario shares in additional assistance payments made by the municipalities to recipients under the three programs. In the other provinces and territories recipients may be eligible for public assistance.

Mothers' Allowances. Allowances to certain needy mothers with dependent children are provided by all provinces, in some through Mothers' Allowances Acts, in others through general social assistance legislation. Assistance is granted to widows, mothers with husbands in mental hospitals, mothers who are deserted and mothers whose husbands are disabled. Some provinces provide also for mothers with husbands in penal institutions and for divorced, separated and unmarried mothers. To be eligible, an applicant must be caring for one or more children and must meet specified conditions of need and residence and, in some provinces, of character or competence and, in two provinces, of citizenship.

General Assistance. Aid is provided in all provinces to persons in need who cannot qualify under programs designed for specific groups. Assistance is normally determined by the local authority and is given on the basis of a means or needs test. In general the municipalities administer the program, with provincial governments assuming responsibility in unorganized territory. In four provinces, however, aid to certain groups of people requiring long-term assistance is administered by the province. All provinces provide for substantial reimbursement to municipalities for relief expenditures except in

Newfoundland where the provincial government administers all forms of general assistance. Under the terms of the Unemployment Assistance Act, the Federal Government shares with the provinces and their municipalities 50 p.c. of the cost of assistance payments to unemployed persons. Immigrants in their first year in Canada may receive aid through the local authority under an agreement made with the province whereby costs are shared by the provincial and federal governments, or they may be referred directly to the local office of the Department of Citizenship and Immigration.

Other Welfare Services

Provincial and municipal government departments, in addition to administering income maintenance programs, offer a number of other services to the community. There are wide differences in the degree to which services have been developed. In some centres they include child welfare and old age services, public housing, post-sanatorium rehabilitation programs, nursery and day care programs, recreation, family and juvenile courts and other correctional services, and the maintenance, supervision and licensing of welfare institutions.

An important role in meeting the needs of families is also played by voluntary family service agencies, of which there are some 96 in the principal centres throughout the country. These agencies, which sometimes combine certain child welfare services with their family programs, were among the pioneer welfare agencies of Canada but, whereas their principal function for many years was the provision of material aid, emphasis today is largely on casework and counselling, though groupwork techniques are now being introduced.

In addition to family agencies, more specialized organizations are available in some centres to meet particular needs. Services such as homemaker services, recreation, day care centres, services for special groups such as the aged, immigrants, youth groups and former prisoners are also provided by voluntary agencies with co-ordination of services in the larger centres a function of the local welfare council. Ethnic and religious groups also provide many services to special groups.

Voluntary agencies are financed by public contributions, from the public, usually through a united fund or community chest, and some may also be assisted by grants from municipal, provincial or federal governments.

Child Welfare and Protection. Services for children, especially those suffering from parental neglect or deprived of normal home life, were among Canada's earliest welfare programs. Child welfare agencies in most Canadian communities increasingly emphasize casework designed to strengthen the family's capacity to care for its children. Where placement is essential, children may be made wards of child welfare agencies either temporarily pending the improvement of home conditions or permanently where a return to the home is not envisaged. Action to transfer the guardianship of children from a parent to an agency is taken only on court authority.

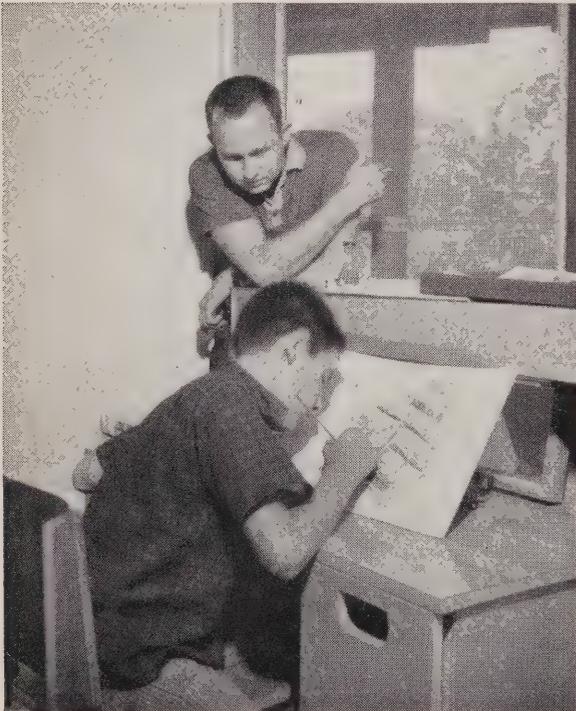
The unmarried mother is assisted in social and legal problems and when the decision is to place the child, adoption is the plan normally made. More than 12,000 adoptions are completed in Canada annually. The majority of children involved being those of unmarried parents.

Children in the care of agencies and not placed for adoption are usually cared for in foster homes, though institutions are still used extensively. Specialized institutions care for children having emotional disturbances or problems which cannot be met adequately in the normal foster home. Rapid expansion is occurring in community services for retarded children and many centres have classes and schools for them.

Child welfare services are provided under provincial legislation and all provinces have some central authority. Except in Quebec, the program may be administered by the provincial authority itself or may be delegated to local children's aid societies, which are voluntary agencies with local boards of directors supervised and assisted financially by the province. Services are operated provincially in Saskatchewan, Prince Edward Island, Newfoundland, and to a large extent in Alberta, where there is also some delegation of authority to the municipalities. In Ontario and New Brunswick, services are administered by a network of children's aid societies covering the entire province; in British Columbia, Manitoba and Nova Scotia, children's aid societies serve some areas with the province providing direct services elsewhere. In Quebec, child welfare services are provided by agencies and institutions under private, and largely religious, auspices with provincial supervision and grants toward child maintenance being administered by the Department of Social Welfare.

Services for the Aged. A variety of welfare services is offered under public and voluntary auspices to older persons in many communities. These include informational, counselling and referral services, friendly visiting, housing registries and homemaker services. Voluntary services are provided in several cities by family agencies and in a few by agencies organized specially to serve older persons. A large number of clubs and some centres have been established to provide recreational and social activities, ranging from games and group singing to extensive handicraft programs and lectures. Some centres provide casework counselling and employment services.

In recent years a number of specially designed low-rental housing projects have been built for older persons, particularly in Ontario and the four western provinces. Generally these have been financed by a combination of federal low-interest loans, provincial grants and municipal and voluntary contribu-



A boy in an institution for emotionally disturbed children finds in painting a relief from tension.

Handiwork made by crippled civilians and sold through a voluntary agency.



tions. Welfare institutions are maintained to care for many older people who do not require hospital care, operated mainly by municipal governments or voluntary and religious organizations, generally with some form of public aid. An effort is made in some provinces to place well, older persons in small boarding homes. The aged who are chronically ill are cared for in chronic and convalescent hospitals, private or public nursing homes and in homes for the aged and infirm.

Correctional Services. The responsibility for Canada's adult correctional services is shared by the federal and provincial governments. Institutions that care for prisoners who receive a sentence of two years or more are a federal responsibility; institutions for short-term prisoners are provincial. Voluntary welfare agencies do much of the parole supervision and provide after-care service. The juvenile services are provincial with institutional care and preventive services under the auspices of voluntary welfare agencies in some provinces.

Veterans Affairs

Canadian veterans and their dependants are still eligible for many of the benefits of Canada's Veterans Charter, although through the passage of time some benefits—war service gratuities, training and education, out-of-work allowances, etc.—have long since fulfilled their purposes.

Of the continuing benefits, final application dates have been set for veterans insurance, re-establishment credit, and qualification for assistance under Part I of the Veterans' Land Act. For the former the expiry date is September 30, 1962, for all eligible persons; and for the latter two the dead-lines are September 30, 1962, for World War II veterans, and 15 years after discharge for those who served in the Special Force (Korea).

Included in the several benefits for which no final application dates have been established and which will be available to Canadian veterans and their dependants as long as they live, are disability pensions to dependants of deceased members of the forces under the terms of the Pension Act, war veterans allowances, medical treatment for service-incurred disabilities and certain welfare services.

Assistance is also available to children of the war dead who undertake courses in advanced education in approved institutions and up to October 31, 1960 more than 2,000 such children had taken advantage of this benefit.

On August 1, 1960, the War Veterans Allowance Act was amended to make available, for the first time, the benefits of this legislation to Commonwealth and Allied veterans of World War II who have resided in Canada for 10 years and who are otherwise eligible, and to provide for the payment, under certain circumstances, of the allowances to recipients residing outside Canada.

As at September 30, 1960, there were approximately 69,200 WVA recipients, and the estimated cost of their allowances for the 1960-61 fiscal year was over \$62,000,000.

The number of pensions—disability and dependent—payable under the Pension Act has continued to decline slowly, with about 187,000 being in payment at September 30, 1960. The estimated cost of these pensions for the fiscal year 1960-61 was \$149,000,000.

On September 1, 1960, a new, 314-bed wing at Shaughnessy Hospital, Vancouver, B.C., replacing an equivalent amount of obsolete accommodation, was opened. During the 1960-61 fiscal year progress was made on the construction of a 300-bed wing at Westminster Hospital, London, Ontario, also replacement accommodation, and work was started on the Veterans' Wing at St. John's General Hospital, St. John's, Nfld.

The total normal capacity of the Department's 11 active treatment hospitals, two convalescent centres and two domiciliary-care homes is now rated at 8,945 beds.

As a result of the 1959 amendments to the Veterans' Land Act, particularly the increases in the amounts available under Part III, a large number of applications for additional loans were received and dealt with during 1960.

At the end of September, 1960, there were 53,870 VLA accounts in effect, 33,909 veterans had earned their conditional grants, and 21,638 settlers had received titles to their properties.

Also at September 30, 1960, only \$14,500,000 out of an original amount of \$388,400,000 in re-establishment credit remained unclaimed. Approximately 89,000 veterans are eligible to claim this credit, but those living outside Canada may use it for the purchase of veterans insurance only.

The number of veterans insurance policies in force at the end of September, 1960, was 30,627 and their face value totalled \$95,600,000.



Three children of the war dead who are studying at university with financial assistance from the Federal Government.



One of Canada's newest deep-sea freighters, the *Seaway Queen*, was launched just before the St. Lawrence Seaway was opened in 1959. Canada's trade with other countries reached a new peak in 1960 and totalled \$10,891,100,000 in value.

The Canadian Economy in 1960

The Canadian economy reached new records in production, consumption, trade and employment in 1960, in a situation of generally stable prices, but the pace of expansion slowed down during the course of the year.* Gross national product in the first nine months of 1960 was nearly 3 p.c. higher than in the comparable period of 1959, about half of which represents a rise in prices. The 1.5 p.c. gain in the physical volume of production was significantly lower than the post-war average as well as lower than that of the previous year. A roughly comparable rise in employment in 1960 fell short of the growth of the labour force, leaving the rate of unemployment considerably higher.

Among the components of demand, important elements of strength were present in the external sector. The vigorous expansion of economic activity in industrialized overseas countries made for a substantial gain in exports; exports to the United States were virtually unchanged. At the same time imports were very little higher. The narrowing of the deficit on international current account was a notable development of the year. While there was some weakness in the market for durables, consumer spending continued to rise but at a lower rate than in 1959. Investment in plant and equipment remained high but failed to realize the increase that had been expected early in the year. While outlays for housing responded strongly to the easing in mortgage markets in the latter part of the year, they were

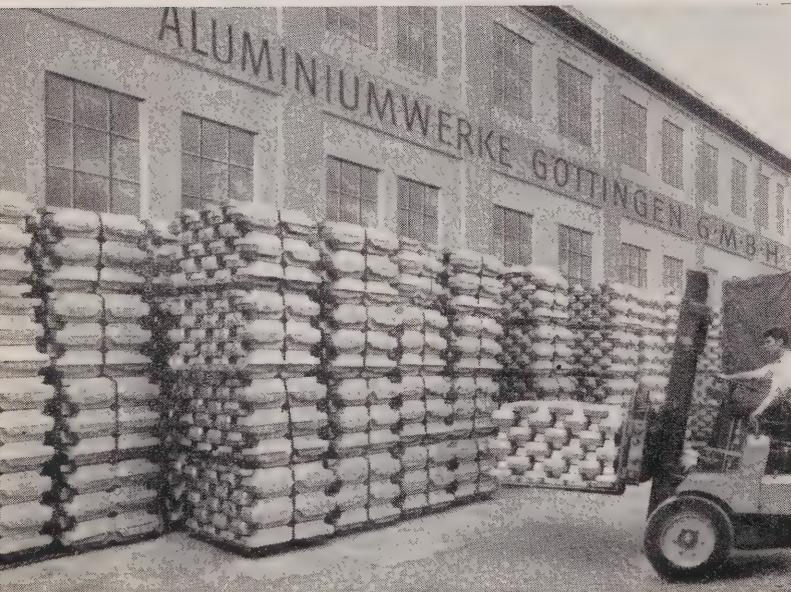
*The figures used for the full year 1960 are based, for the most part, on data for the first nine months.

considerably lower than in 1959. During the course of 1960 business inventories turned from a position of substantial accumulation to one of liquidation and by the third quarter final demand was being met in part by the drawing down of stocks, thereby restraining current production.

These changes in the pattern of demand were accompanied by changes in the magnitude and direction of income flows compared with the previous year. Labour income continued to rise but at a much lower rate, while income of non-farm, unincorporated business, fell below the level of 1959. However, personal investment income roughly maintained its rate of increase and transfer payments rose substantially more than in 1959. The impact of easing activity fell mainly on corporate profits, which declined moderately in contrast to the sharp increase that had accompanied recovery in the previous year. In these circumstances personal income tended to rise more than national income. The flow of income between the private and government sectors was also affected. Government revenues from taxation were less buoyant, as yields from personal direct taxes and indirect taxes rose somewhat less than in 1959 and corporate tax liabilities registered the moderate decline in corporate profits.

The outstanding feature of the international economic climate in 1960 was the contrast between the marked expansion of the overseas industrialized countries and the sluggish behaviour of the economy of the United States. While there were many indications toward the end of the year that the pace of activity in Western European countries was beginning to slow down, the strength of demand for Canadian export products in the first nine months of the year was such as to raise sales to the countries of the European common market by more than 35 p.c. compared with the same period of 1959, and sales to the United Kingdom by 20 p.c. The 28 p.c. gain in sales to Japan was also extremely large. At the same time, sales to the United States were virtually unchanged. Merchandise exports to all countries rose 8 p.c.

Industrial materials largely account for the rise in exports, the greatest contributors being copper, newsprint, nickel, aluminum and chemicals, partially offsetting losses occurred in shipments of wheat and other grains, uranium and farm implements.



Canadian aluminum ingots are delivered to a plant in Göttingen, Germany. Aluminum is sixth in the list of leading domestic exports although the raw materials for it (bauxite and alumina) have to be imported.



One of four new Canadian metropolitan air terminals built with public funds and opened in 1960, the Montreal International Airport at Dorval cost \$30,000,000.

The somewhat hesitant state of business activity in Canada in 1960 was reflected in the movement of commodity imports, which showed only a small increase in contrast to the sharp advance of the previous year. The moderate drop in investment in plant and equipment and the tendency to reduce rather than build up stocks dampened the demand for imports. Changes by commodities were for the most part fairly moderate and generally offsetting.

The effect of these divergent trends in merchandise exports and imports was to narrow the merchandise deficit in the first nine months of the year to \$130,000,000 from \$419,000,000 in the same period of 1959. At the same time the deficit on non-merchandise items continued to rise, but less than it had done in several preceding years. The deficit on all current international transactions was reduced from \$1,126,000,000 in the first three quarters of 1959 to \$846,000,000 in the first three quarters of 1960.

The consumer sector continued to act as an expansionary influence in the economy but not to the same extent as in some previous years. Consumers spent somewhat more than the gain in disposable income, thus reducing the fairly high rate of personal saving characteristic of the two preceding years. At the same time consumer indebtedness rose substantially. Prices in the consumer sector were only slightly higher and most of the approximately 4 p.c. advance in spending represented a gain in real consumption.

The pattern of consumer spending altered considerably in 1960. Whereas rising consumer demand for durables was an expansionary influence in 1959 (and had been an even stronger stimulus in the recessionary year 1955), in 1960 the demand for durables fell below the level of the previous year. Virtually all categories were so affected. The contrast is especially marked in the case of appliances and radios, where sales had risen about 6 p.c. in 1959 and fell by about the same amount in 1960. Weakness in the market for some durables is apparent in the statistics of factory shipments in the first nine months of 1960 compared with the same period of 1959; shipments of washing machines were down 9 p.c., electric stoves 12 p.c., radios 10 p.c. and television sets 16 p.c. Some of the weakness in the market for household appliances is probably related to the decline in housing activity from the exceptionally high levels of the two preceding years.

Purchases of cars (new and used) were down slightly in contrast to a gain of 9 p.c. in 1959. The market for new cars continued to reflect a growing preference for British and European cars; sales of these cars were substantially higher.

With consumer expenditure on durables down more than 2 p.c., all the 4 p.c. advance in spending in the consumer sector was concentrated on non-durable goods and services, where spending was higher by about 5 p.c. While prices of goods, particularly durable goods, showed only a small increase between 1959 and 1960, the price of services continued to rise, although at a slackening rate. Thus the advance in real consumption of services, unlike goods, was significantly less than the value figures indicate.

Government expenditures, in rising about 3 p.c., also contributed a forward impetus to the economy. The growth in government expenditure continued to be accounted for by higher outlays by provinces and municipalities; Federal Government expenditure was moderately lower.

When the survey of investment intentions was prepared early in the year, it was expected that capital outlays would be somewhat higher than in 1959; these expectations were confirmed at the time of the mid-year survey. However, at the end of the third quarter, capital expenditures were running about 5 p.c. below the average for the full year 1959. Expenditures for non-residential construction were running close to the previous year's rate but outlays for machinery and equipment were significantly lower.

While activity in housing dropped precipitously in the first half of the year, the downward trend was reversed in the second half. Direct lending by Central Mortgage and Housing Corporation, which had been suspended at the end of October 1959, was resumed in April of 1960 and in the late summer the insurance, loan and trust companies began to step up their mortgage lending under the National Housing Act. In the second half of the year

Hamilton, Ontario, solved its parking problem at its new city market by building two parking ramps over the market. During 1960 Canadians spent less on durable goods, more on non-durables such as food, clothing, tobacco, textiles, rubber and leather products, paper products, chemical products and products of petroleum and coal.





Girls assemble clock and watch movements on extensive conveyor lines that allow the exacting work to be done with maximum ease and efficiency. There were 1,661,000 women in the labour force on October 15, 1960, an increase of 5 p.c. over the previous year.

several measures were taken by the government to augment funds and to liberalize conditions of credit for C.M.H.C. lending. Mortgage lending by the chartered banks remained at a very low level. Housing activity responded to easier credit and starts in the third quarter rose 18 p.c., on a seasonally adjusted basis, and were running even higher in October and November, although still well below the exceptionally high levels of 1958 and 1959.

A sharply declining rate of accumulation of business inventories became apparent in the first half of 1960 and by the third quarter the slackening in the rate of build-up had given way to considerable liquidation. By contrast, throughout 1959 the building-up of stocks was adding to the demands on current production and imports. Several factors affected the behaviour of inventories during the course of 1960: the disappearance of inflationary pressures, the ease of obtaining quick delivery on order (since many industries were operating below capacity), the failure of sales to match expectations, and possibly also a long-term trend toward stricter control of stocks. By the third quarter all major industrial groups, with the exception of retail trade, were drawing down inventories, so that final demand was being met in part from stocks which were not being replenished by current production.

Income Flows

The slackening rate of expansion in 1960 was reflected in the magnitude and direction of income flows. National and personal income again diverged, after having moved parallel in 1959, and government revenues from taxation rose less sharply.

Labour income was about 4 p.c. higher than in 1959. Much the largest gain—about 20 p.c.—was in forestry where the flow of income in the preceding year had been interrupted by the prolonged industrial dispute in the woods industry in British Columbia. The gains in the service-producing industries continued to be relatively large, amounting to about 5 p.c. in trade and finance, insurance and real estate, and more than 7 p.c. in government and non-government service; this trend reflects the further expansion of employment in these industries. Labour income in manufacturing was moderately higher and in mining slightly higher. Construction was the only major industry in which labour income declined.

A deterioration in corporate profits in 1960 was a fairly common experience among industries. Corporate profits were down about 6 p.c., after a much larger advance in the previous year. Much the sharpest drop was in wholesale and retail trade, reflecting the unfavourable trend of sales in many lines. Profits in manufacturing were considerably reduced, although some individual manufacturing industries, notably paper products and products of petroleum and coal, earned substantially larger profits. Two groups of industries, mining, quarrying and oil wells and finance, insurance and real estate, recorded a decided improvement in corporate earnings.

Income of non-farm, unincorporated business was affected adversely by the much lower level of activity in housing and by the unfavourable sales experience of some retail trades. According to preliminary estimates, farm income was not much changed. On the other hand, investment income rose at much the same rate as in the preceding year.

Government revenues from taxation continued to rise despite a moderate drop in corporate tax liabilities, in contrast to the sharp increase in the yield from this source in 1959. With a progressive tax structure advances in personal income bring a much more than proportionate increase in personal tax collections, which in 1960 were running more than 13 p.c. higher than in 1959. The yield of indirect taxes was about 5 p.c. higher. Increases in rates of personal and indirect taxes, which became effective in the course of 1959, contributed to the flow of revenue to the government sector.

Production, Employment and Prices

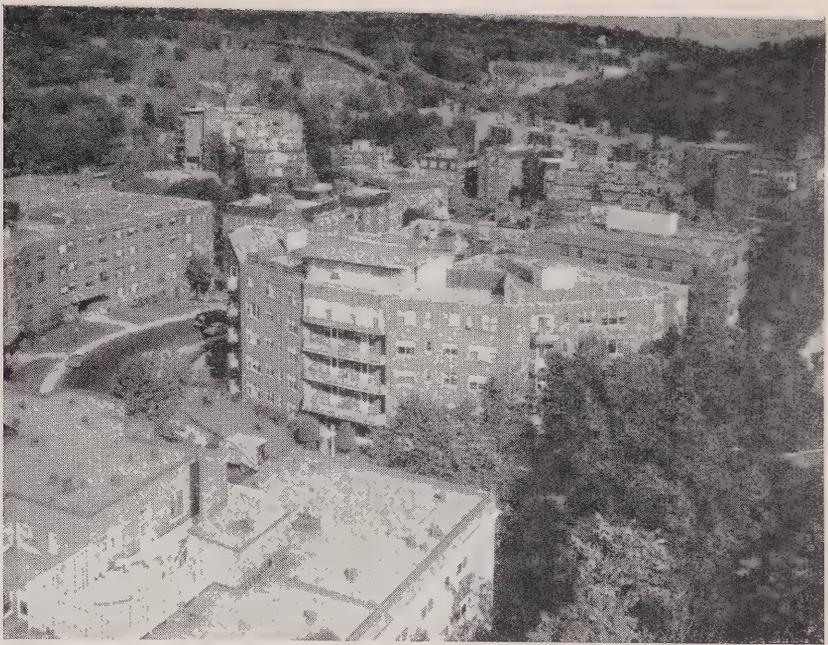
The mingled elements of strength and weakness in the economy were mirrored in the patterns of production and employment.

Much the largest increase in production (as in labour income) occurred in forestry. This increase was associated with a greatly enlarged output of pulpwood and more activity in other logging operations, which had been adversely affected in 1959 by the strike referred to earlier. Mining production was somewhat higher in total, although the trends in output varied widely as between the various metals and minerals. Output of nickel, copper and natural gas was sharply higher and substantial increases took place in the production of lead, asbestos and crude petroleum, while uranium output was much reduced as was output in quarrying.



This oil refinery in St. Boniface, Manitoba, is one of Canada's 44 operating refineries. In terms of crude throughput capacity, Canada ranks third in the world after the United States and the United Kingdom.

While housing completed in cities of 5,000 population and over decreased from 108,059 in 1959 to 90,513 in 1960 several larger cities continued work on large-scale, low-rent housing projects such as this one in Montreal.



Manufacturing production was slightly higher, a moderately increased output of non-durable goods being partially offset by a fractional decline in output of durables. Most of the non-durable goods industries operated at a higher level but activity was reduced in textiles, clothing, leather and rubber products. The only durable goods manufacturing industry to step up its production considerably was non-ferrous metal products; this gain was related to higher production of nickel and aluminum. Output of wood products was somewhat higher. Among the durable goods industries the most marked decline was in non-metallic mineral products.

In a situation of reduced activity in construction, the volume of activity in the industry was considerably lower than in 1959. The quarrying division of the mining industry and the non-metallic minerals group in manufacturing are closely related to construction and their output is to a large extent determined by the demand for building materials.

The volume of activity continued to rise in all the service-producing industries, although the increase in the trade group was extremely small. The transportation, communication and storage group increased output in spite of a reduction in the volume of traffic handled by the railways.

The 1.5 p.c. gain in production was accompanied by a 2 p.c. increase in employment. Most of the new opportunities for jobs in 1960 developed in trade, finance, insurance and real estate, and services, all industries having a high proportion of women workers. Thus the number of women employed increased by over 5 p.c. between the two years and the number of men employed by less than 1 p.c. However, the expansion in employment fell short of the growth in the labour force and the rate of unemployment in 1960 was about 7 p.c. of the labour force, compared with 6.3 p.c. in 1959.

Prices remained fairly stable during 1960 and the increase over 1959 registered in gross national product reflected advances that had taken place earlier. Those prices measured by the consumer price index continued to show some upward pressure but the wholesale price index remained remarkably stable throughout the year. Within wholesale prices there were some commodities whose price was falling but for the most part there was stability among the component groups as well as in the general index.

National Income and Gross National Product, Selected Years 1939-59

(Millions of Dollars)

Item	1939	1946	1950	1956	1957	1958	1959
Income							
Wages, salaries and supplementary labour income.....	2,601	5,487	8,629	14,890	15,996	16,434	17,717
Military pay and allowances....	32	340	137	424	476	491	496
Corporation profits before taxes ¹	521	1,269	2,118	2,908	2,547	2,483	2,836
Rent, interest and miscellaneous investment income.....	301	581	890	1,767	1,905	2,015	2,094
Accrued net income of farm operators from farm production....	362	1,056	1,322	1,450	996	1,193	1,108
Net income of non-farm unincorporated business including independent professional practitioners.....	475	1,072	1,439	1,965	2,011	2,119	2,150
Inventory valuation adjustment..	-56	-254	-374	-238	-71	-33	-120
Net National Income at Factor Cost.....	4,236	9,551	14,161	23,166	23,860	24,702	26,281
Indirect taxes less subsidies....	734	1,270	2,000	3,636	3,848	3,883	4,220
Capital consumption allowances and miscellaneous valuation adjustments.....	637	998	1,913	3,642	3,994	3,923	4,131
Residual error of estimate.....	29	31	-68	141	71	98	-39
Gross National Product at Market Prices.....	5,636	11,850	18,006	30,585	31,773	32,606	34,593

¹ Excludes dividends paid to non-residents.

Gross National Expenditure, Selected Years 1939-59

(Millions of Dollars)

Item	1939	1946	1950	1956	1957	1958	1959
Personal expenditure on consumer goods and services.....	3,984	8,031	12,026	18,833	19,964	21,035	22,261
Government expenditure on goods and services ¹	683	1,796	2,344	5,386	5,738	6,161	6,437
Business gross fixed capital formation: ²							
New residential construction..	174	368	883	1,526	1,409	1,763	1,743
New non-residential construction.....	164	435	1,042	2,589	3,103	2,811	2,592
New machinery and equipment	254	585	1,423	2,659	2,823	2,401	2,626
Value of physical change in inventories:							
Non-farm business inventories..	101	360	399	808	311	-323	355
Farm inventories and grain in commercial channels.....	181	-27	151	276	-101	-112	-55
Exports of goods and services....	1,451	3,210	4,183	6,365	6,394	6,332	6,657
Less: Imports of goods and services.....	-1,328	-2,877	-4,513	-7,715	-7,796	-7,363	-8,062
Residual error of estimate.....	-28	-31	68	-142	-72	-99	39
Gross National Expenditure at Market Prices.....	5,636	11,850	18,006	30,585	31,773	32,606	34,593

¹ Includes outlays on new durable assets such as building and highway construction by governments, other than government business enterprises; includes also net purchase of government commodity agencies.² Includes capital expenditures by private and government business enterprise, private non-commercial institutions and outlays on new residential construction by individuals and business investors.

Source of Personal Income, Selected Years 1939-59

(Millions of Dollars)

Source	1939	1946	1950	1956	1957	1958	1959
Wages, salaries and supplementary labour income.....	2,601	5,487	8,629	14,890	15,996	16,434	17,717
Less: Employer and employee contributions to social insurance and government pension funds.....	-35	-149	-256	-532	-589	-614	-664
Military pay and allowances....	32	340	137	424	476	491	496
Net income received by farm operators from farm production ¹	412	1,034	1,156	1,430	1,002	1,197	1,116
Net income of non-farm unincorporated business.....	475	1,072	1,439	1,965	2,011	2,119	2,150
Interest, dividends and net rental income of persons.....	570	817	1,268	1,908	2,013	2,120	2,300
Transfer payments to persons:							
From government (excluding interest).....	229	1,106	1,030	1,766	2,079	2,657	2,785
Charitable contributions by corporations.....	6	12	25	34	36	36	40
Personal Income.....	4,290	9,719	13,429	21,885	23,024	24,440	25,940

¹ This item differs from item five of the table on p. 232 in that it excludes the adjustment to take account of accrued net earnings arising out of the operations of the Canadian Wheat Board.

Disposition of Personal Income, Selected Years 1939-59

(Millions of Dollars)

Disposition	1939	1946	1950	1956	1957	1958	1959
Personal Direct Taxes:							
Income taxes.....	62	711	612	1,496	1,693	1,555	1,747
Succession duties.....	28	54	66	146	126	126	130
Miscellaneous.....	22	31	62	90	98	113	211
Total Personal Direct Taxes.....	112	796	740	1,732	1,917	1,794	2,088
Personal Expenditure on Consumer Goods and Services:							
Non-durable goods.....	2,186	4,829	6,711	9,736	10,357	10,853	11,400
Durable goods.....	312	596	1,451	2,431	2,431	2,500	2,658
Services.....	1,486	2,606	3,864	6,666	7,176	7,682	8,203
Total Personal Expenditure on Consumer Goods and Services.....	3,984	8,031	12,026	18,833	19,964	21,035	22,261
Personal Saving:							
Personal saving excluding farm inventory change.....	140	878	583	1,079	1,295	1,690	1,658
Value of physical change in farm inventories.....	54	14	79	241	-152	-79	-67
Total Personal Saving.....	194	892	662	1,320	1,143	1,611	1,591
Personal Income.....	4,290	9,719	13,429	21,885	23,024	24,440	25,940
Personal Disposable Income¹....	4,178	8,923	12,688	20,153	21,107	22,646	23,852

¹ Personal income less total personal direct taxes.



Bonsecours Market in Montreal is one of many open markets where farmers sell their produce directly to the consumer.

Domestic Trade

Domestic trade consists of those business transactions which facilitate the distribution of goods and services within the nation. Although the structure of this trade is always in a process of change, the last decade probably has witnessed more changes than has any comparable period. These will not be fully appreciated until the 1961 decennial census of merchandising has been completed and analyzed. Indeed, the census of merchandising has been designed to bring out the significant structural changes in the internal distribution of goods as well as to emphasize the nature and costs of the many services to the public.

Many kinds of business organizations are engaged in domestic trade. Wholesale houses, retail stores, hotels, theatres, transportation firms, banks, insurance companies and storage warehouses all perform functions which

make it possible for raw materials needed by industries, household merchandise and services of various kinds to be distributed within the country.

Much wholesale business is done by firms whose principal activity is not wholesaling. As retail organizations increase in size, it becomes necessary for them to buy merchandise in larger quantities. Consequently, some retail firms have found it profitable to undertake many of the functions formerly belonging only to wholesalers. Some manufacturers also have extended their operations into the wholesale field as, for example, when the product being sold is a complicated machine requiring installation and maintenance services by factory trained or expert technicians.

In retail trade, grocery and combination stores continued to lead the individual trade totals with sales of \$3,431,000,000 in 1960. Chain stores accounted for approximately \$1,583,000,000 or 46.1 p.c. of this total. Motor vehicle dealers were second in dollar volume with 1960 sales of \$2,613,000,000. Total trade, through establishments classed as retail, amounted to an estimated \$16,414,000,000 in 1960. This total does not include consumer expenditure on the direct selling of merchandise such as certain appliances, cosmetics, magazines, books and records, etc., sold either door-to-door or by means of mail order.

Another component of consumer spending not included in the retail sales estimates is the business done by vending machine operators who transacted in 1959 an estimated \$33,741,939 of merchandise sales in a variety of locations. Tobacco products accounted for 59 p.c. of this total, with soft drinks second with 17 p.c. and hot drinks a close third with 12 p.c. This business was handled through 40,237 machines, operated by 479 firms and individuals. These statistics do not as yet include receipts of amusement machines nor do they cover sales made through all automatic vending machines. A considerable amount of merchandise is sold through vending machines operated in restaurants, hotels, etc., by the owners of these businesses as distinct from that done by specialist firms who make a business of supplying and servicing machines in various locations.

Increasingly popular is the coin-operated laundry equipped with washing machines, dryers, soap dispensers and machines to make change. Other automatic venders sell cigarettes, hot and cold drinks, accident insurance and stamps, shine shoes, turn on radio or TV, collect tolls and spray perfume.





More than half of working Canadians are engaged in the provision of services, as differentiated from the production of goods. Barber shops and beauty parlours are mostly owner-operated.

Hotels comprise one of the largest service industries in Canada, receipts of hotels having risen from \$357,000,000 in 1951 to \$517,000,000 in 1959. These amounts do not include the business of motels and cabin courts which has grown very rapidly in the same period. Motion picture theatres are another important service industry. In 1959 there were 1,515 regular auditorium type theatres and 234 drive-in theatres with 128,859,000 total admissions during the year as against 1,808 regular theatres and 82 drive-in theatres with 245,687,000 admissions in 1951, before television sets became so popular.

Wholesale Statistics. Only one section of wholesale trade is surveyed on a current basis; this covers wholesale merchants who take title to goods they sell and generally perform the function of warehousing and delivery.

Estimates of Wholesale Sales, 1955-59

Kind of Business	1955	1956	1957	1958	1959 ¹
	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000
Fresh fruits and vegetables.....	224.4	230.2	228.2	252.7	261.5
Groceries and food specialties....	1,046.9	1,117.2	1,215.2	1,328.3	1,447.3
Meat and dairy products.....	133.9	141.4	146.0	167.8	160.4
Clothing and furnishings.....	84.8	84.0	80.9	81.7	85.1
Footwear.....	28.8	28.9	27.9	29.9	32.0
Textile and clothing accessories..	182.6	196.3	197.1	210.5	213.4
Drugs and drug sundries.....	164.6	176.9	187.7	202.2	219.1
Household electrical appliances..	164.4	163.0	159.5	164.5	176.8
Farm machinery.....	60.2	72.1	60.3	73.4	90.4
Coal and coke.....	148.0	171.0	162.0	139.4	131.3
Hardware.....	280.1	310.2	303.8	295.5	307.0
Construction materials, etc.....	704.8	760.3	732.8	770.6	798.8
Industrial and transportation equipment and supplies.....	561.6	742.2	721.4	621.7	681.9
Commercial, institutional and service equipment and supplies	89.8	102.9	102.7	106.6	122.3
Automotive parts and accessories	302.7	338.0	342.1	363.8	397.8
Newsprint, paper and products..	240.5	264.3	265.0	257.3	270.7
Tobacco, confectionery and soft drinks.....	473.3	509.0	544.6	572.9	610.3
All other.....	1,725.2	2,076.7	1,989.3	2,004.7	2,249.6
Totals.....	6,616.6	7,484.6	7,466.5	7,643.5	8,255.7

¹ Preliminary.

Retail Statistics. Estimated retail sales totalled \$16,413,500,000 in 1960, an amount 0.8 p.c. higher than the 1959 figure. Variety stores registered the largest increase in sales from the previous year with a gain of 5.5 p.c.

Retail Store Sales by Type of Business and by Province, 1958-60

Type of Business and Province	Sales			Percentage Change 1959-60
	1958	1959	1960 ¹	
Type of Business	\$'000,000	\$'000,000	\$'000,000	
Grocery and combination stores.....	3,125.9	3,287.3	3,430.6	+4.4
Other food and beverage stores.....	1,119.7	1,177.5	1,211.8	+2.9
General stores.....	624.7	629.8	636.1	+1.0
Department stores.....	1,345.3	1,420.0	1,447.6	+1.9
Variety stores.....	315.1	330.6	348.8	+5.5
Motor vehicle dealers.....	2,413.6	2,613.4	2,612.6	²
Garages and filling stations.....	1,036.7	1,103.6	1,097.5	-0.6
Men's clothing stores.....	237.6	249.9	249.6	-0.1
Family clothing stores.....	226.6	225.8	233.4	+3.3
Women's clothing stores.....	265.0	273.2	275.1	+0.7
Shoe stores.....	146.3	155.0	161.3	+4.1
Hardware stores.....	317.8	326.4	320.3	-1.9
Lumber and building material dealers.....	481.6	492.3	439.5	-10.7
Furniture, radio and appliance stores.....	565.8	581.1	551.6	-5.1
Restaurants.....	542.8	566.7	552.8	-2.5
Fuel dealers.....	326.3	341.8	324.9	-4.9
Drug stores.....	382.7	405.1	408.7	+0.9
All other stores.....	1,970.8	2,104.1	2,111.3	+0.3
Totals.....	15,444.3	16,283.6	16,413.5	+0.8
Province				
Atlantic Provinces.....	1,290.1	1,361.6	1,416.5	+4.0
Quebec.....	3,646.7	3,877.6	3,958.4	+2.1
Ontario.....	5,934.4	6,218.4	6,258.1	+0.6
Manitoba.....	753.6	812.9	826.7	+1.7
Saskatchewan.....	913.5	950.9	937.1	-1.4
Alberta.....	1,274.8	1,355.1	1,354.9	²
British Columbia (incl. Yukon and N.W.T.).....	1,631.2	1,707.1	1,661.8	-2.7

¹ Preliminary.² Less than 0.05 p.c.

The new \$12,500,000 Chinook Shopping Centre, Calgary, Alberta, covers 40 acres and features a centrally heated, air-conditioned concourse. In the lower left corner is the eight-storey, three-sided pylon from the top of which issues a 15-foot flame of natural gas.



Shopping by card is a merchandise innovation being tried out at various stores. The shelves are stocked with samples only; beneath each article are stacked key-punch cards. The customer takes a card to the cashier who drops it into an accounting machine, which, in a matter of seconds, produces three invoices giving the name of the item, its description, its price and the wicket number at which the customer is to collect it. By the time the customer has paid for his purchase and walked to the right wicket, the item has been taken from stock and is ready for him. Advantages are increased room to show a variety of articles, elimination of shop-worn goods, savings in staff, speeding up of service and an automatic inventory obtained by machine-sorting the cards into departments.

Statistics for chain stores are shown in the following table; figures for 1959 are the latest available. These stores, including all those operating four or more retail outlets, accounted for approximately 20 p.c. of the total retail business in Canada.

Chain Store Statistics, 1953-59

Year	Stores	Retail Sales	Salaries of Store Employees	Stocks on Hand End of Year		Accounts Outstanding End of Year
				Store	Warehouse	
	Av. No.	\$'000	\$'000	\$'000	\$'000	\$'000
1953.....	7,835	2,048,228	171,167	179,704	52,096	91,538
1954.....	8,136	2,146,635	181,509	191,049	57,814	102,747
1955.....	8,274	2,353,955	199,611	205,833	63,120	127,362
1956.....	8,559	2,647,055	221,136	232,392	72,183	143,357
1957.....	8,822	2,841,569	242,979	248,284	78,521	148,506
1958.....	9,122	3,073,147	262,456	265,862	78,512	158,232
1959.....	9,491	3,280,263	285,691	282,530	80,440	162,453

Sales of new passenger cars reached an all-time high during 1960 with 448,120 units sold for a total of \$1,290,195,000. The financing of new passenger

vehicle sales by sales finance companies covered 36.6 p.c. of new car sales in 1960, the lowest proportion to date.

New Passenger Car Sales and Financing, 1954-60

Year	Sold		Financed		P.C. of Total Sales Financed	
	No.	Retail Value	No.	Retail Value	No.	Value
		\$'000		\$'000		
1954.....	310,546	797,554	126,099	230,900	40.6	29.0
1955.....	386,962	1,023,351	156,191	305,069	40.4	29.8
1956.....	408,233	1,128,640	190,109	408,993	46.6	36.2
1957.....	382,023	1,087,620	171,904	385,043	45.0	35.4
1958.....	376,723	1,110,724	147,402	335,827	39.1	30.2
1959.....	425,038	1,240,961	158,022	371,392	37.2	29.9
1960 ¹	448,120	1,290,195	163,957	377,256	36.6	29.2

¹ Preliminary.

Consumer Credit. Credit has become an integral part of the distribution of goods and services and of the buying habits of a large percentage of Canadians. The extension of credit to consumers, even as the extension of credit to business men, is the quickest means by which they can expand their assets. It is, in effect, a form of compulsory saving and an important stimulus to industry.

Whether or not the securing of easy credit is an advantage to the individual, the fact remains that the amount of consumer debt increased more than 500 p.c. in the period 1946 to 1960 while retail sales, the source of most of this credit, increased only 180 p.c. The following figures of credit outstanding do not include real estate credit or other avenues of credit such as that given by service trades, professionals, loans between individuals, etc.

Consumer Credit Outstanding (estimates of selected items), 1953-60

Date	Charge Accounts	Instalment Credit			Cash Personal Loans ¹	Total Selected Items
		Retail Dealers	Finance and Loan Companies	Total		
	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000	\$'000,000
1953—Dec. 31.....	339	284	520	804	489	1,632
1954—“.....	363	322	497	819	568	1,750
1955—“.....	374	377	605	982	722	2,078
1956—“.....	389	409	769	1,178	789	2,356
1957—“.....	382	444	795	1,239	781	2,402
1958—Mar. 31.....	339	414	763	1,177	794	2,310
June 30.....	348	418	797	1,215	852	2,415
Sept. 30.....	328	451	818	1,269	986	2,583
Dec. 31.....	371	490	787	1,277	947	2,595
1959—Mar. 31.....	330	456	766	1,222	1,006	2,558
June 30.....	332	458	824	1,282	1,126	2,740
Sept. 30.....	347	464	851	1,315	1,191	2,853
Dec. 31.....	391	524	844	1,368	1,178	2,937
1960—Mar. 31.....	342	495	831	1,326	1,177	2,845
June 30.....	345	506	888	1,394	1,284	3,023

¹ Exclusive of loans extended by credit unions.

Prices

Wholesale Prices. During 1960, the general wholesale index increased moderately to a peak of 232.2 in July, its highest point since 1952, and then eased to 230.1 in December, only slightly above the December 1959 index level of 229.7. As a result, the annual average level of prices in 1960 was practically unchanged from that of 1959. Compared to a year earlier, the December 1960 indexes were lower for five of the eight principal component groups within the general index. The movements of the component indexes during the year were mixed.

The animal products index declined during the early months of 1960 and, in spite of a sharp rise in early summer, averaged some 4 p.c. below the 1959 index over the January-September period. During this period prices were lower in 1960 for hides and skins, unmanufactured leather, livestock, fresh meats, cured meats, and beef and veal carcass. In the last quarter of 1960, the index increased 1.5 p.c. in contrast to the sharp 4.3 p.c. drop in the same period of 1959, and in December stood at 255.8, which was 3.4 p.c. above the December 1959 index of 247.4. Higher prices for fishery products, livestock, cured meats and dressed fowl in 1960 were the principal causes of the divergent movements in the final quarters of the two years. Over the year, the animal products index averaged 247.6, which was 2.6 p.c. lower than the 1959 annual average of 254.3. The textile products index in 1960 ran slightly higher than in 1959. From 228.1 in December 1959 the index advanced to 231.4 in May of 1960 and then eased down to 229.6 in December, 0.6 p.c. above the level of a year earlier.



Department stores take in almost 9 cents of every dollar spent in retail stores and in most of them customers can buy all their domestic needs, from a piano to a paper of pins.

◁ This handsome new department store was opened during 1960 in Saskatoon, Saskatchewan.



In 1958 Canadians spent \$2,413,581,000 to buy motor vehicles and \$1,036,718,000 at garages and filling stations to maintain them.

During the first half of 1960, the wood products index averaged slightly higher than in the same period of 1959, and mainly reflected higher prices for wood-pulp in the second quarter. From May to September the index dropped 2.1 p.c., from 307.6 to 301.0, with lower prices for wood-pulp and sharper declines for fir, cedar and hemlock. It then edged downward to 300.2 at the close of 1960, down 1.0 p.c. from the December 1959 index of 303.4. The vegetable products index rose from 200.3 in December 1959 to a high of 205.6 in April but gradually fell thereafter to 198.7 at the close of the year, 0.8 p.c. below the index of a year earlier. Most of the decrease since April was attributable to lower prices for grains, livestock and poultry feeds, rubber and its products, and potatoes. Over the year the 1960 index averaged 202.4, which was 1.4 p.c. higher than the 1959 average of 199.5. The non-ferrous metals index declined 0.5 p.c. over the year, from 175.8 in December 1959 to 174.9 in December 1960, as price decreases among copper, lead and zinc and their products in the last half of 1960 outweighed earlier increases for the same commodities. Over the year, however, the 1960 index averaged 177.7 or 1.8 p.c. above the 1959 average of 174.6.

The three remaining principal group indexes—iron products, non-metallic minerals, and chemical products—remained fairly steady in 1960 at practically the same levels as in 1959.

The index of prices of Canadian farm products at terminal markets, on the base 1935-1939=100, rose from 215.0 in December 1959 to 219.6 in December 1960. The fluctuations over the year were in a narrow range, with the year's high of 228.9 occurring in June. Among underlying price changes were the strength in livestock, particularly hogs, which commenced in the first quarter; the abrupt drop in August from seasonally high potato prices on eastern markets; and a major increase in egg prices over the year.

The indexes of prices of building materials showed little change over the year 1960. The residential buildings materials price index (1935-1939=100) declined almost steadily during 1960 and at 293.7 in December 1960 was down



This is a retail store for retail merchants. Here they may buy in small quantities for cash. The small operator uses this service to save time and to introduce new items.

from 295.9 a year earlier. The non-residential building materials price index (1949=100) moved up from 132.2 in December 1959 to a seasonal high of 132.8 in July and declined thereafter to 132.3 in December 1960, just slightly above a year ago.

Annual and Monthly General Wholesale and Special-Purpose Price Indexes, 1953-60

(1935-39=100)

NOTE.—All 1960 indexes and Canadian farm products indexes subsequent to July 1959 are subject to revision.

Year or Month	General Wholesale Prices	Raw and Partly Manufactured	Fully and Chiefly Manufactured	Canadian Farm Products	Residential Building Materials	Non-residential Building Materials (1949=100)
1953.....	220.7	207.0	228.8	221.6	282.6	124.4
1954.....	217.0	204.8	224.2	213.6	277.5	121.8
1955.....	218.9	209.7	224.5	212.6	283.4	123.4
1956.....	225.6	215.8	231.5	214.2	292.9	128.0
1957.....	227.4	209.4	237.9	213.6	292.8	130.0
1958.....	227.8	209.3	238.3	221.6	290.2	129.8
1959.....	230.6	210.9	241.6	222.7	296.3	131.7
1960.....	230.6	209.4	242.1	219.8	294.5	132.4
1960—January.....	230.5	208.9	242.2	218.5	296.1	132.2
February.....	230.0	208.6	241.4	215.8	295.6	132.0
March.....	229.6	208.0	241.0	217.4	295.6	132.2
April.....	231.3	210.9	242.2	222.2	295.7	132.5
May.....	231.3	211.0	242.3	223.8	295.4	132.4
June.....	231.9	212.8	242.4	228.9	295.4	132.5
July.....	232.2	212.4	242.9	225.7	295.0	132.8
August.....	230.2	208.9	241.7	216.3	293.4	132.6
September.....	230.4	208.7	242.1	217.2	293.1	132.3
October.....	230.3	208.4	242.2	215.7	292.2	132.4
November.....	229.7	207.3	242.0	216.5	292.9	132.1
December.....	230.1	207.2	242.6	219.6	293.7	132.3

Retail Prices. The consumer price index is Canada's official measure of the percentage change through time in Canadian urban retail prices. Specifically, the index is designed to measure changes in the cost of purchasing a constant "basket" of goods and services representing the purchases made by a broad but specific group of the Canadian urban population. The index reflects, therefore, the impact of price change on the cost of living represented by purchase of the index basket.

During 1960, the consumer price index rose to 128.0, 1.2 p.c. above the 1959 level of 126.5. The increase was similar to that which occurred between 1958 and 1959 and extended the period of upward movement of the index which began in mid-1956. The index reached a seasonal low in March at 126.9 and climbed steadily after mid-summer to a peak of 129.6 in November. All five component groups within the index increased during the year. The food, clothing and household operation indexes rose less than one p.c. above their 1959 levels but the indexes for shelter and other commodities and services recorded larger increases.

Consumer Price Index Numbers, 1952-60

(Av. 1949=100)

Year or Month	Food	Shelter	Clothing	Household Operation	Other Commodities and Services	Total
1952.....	116.8	120.2	111.8	116.2	116.0	116.5
1953.....	112.6	123.6	110.1	117.0	115.8	115.5
1954.....	112.2	126.5	109.4	117.4	117.4	116.2
1955.....	112.1	129.4	108.0	116.4	118.1	116.4
1956.....	113.4	132.5	108.6	117.1	120.9	118.1
1957.....	118.6	134.9	108.5	119.6	126.1	121.9
1958.....	122.1	138.4	109.7	121.0	130.9	125.1
1959.....	121.1	141.4	109.9	122.7	134.9	126.5
1960.....	122.2	143.7	110.9	123.3	137.6	128.0
1960—January.....	121.6	142.8	110.2	123.3	136.9	127.5
February.....	120.8	142.9	109.8	123.2	137.0	127.2
March.....	119.4	142.9	110.4	123.4	137.0	126.9
April.....	120.9	143.3	110.8	123.5	137.1	127.5
May.....	120.2	143.5	110.8	123.1	137.6	127.4
June.....	120.8	143.8	110.9	123.0	137.7	127.6
July.....	120.5	143.9	110.8	123.0	137.6	127.5
August.....	121.7	144.0	110.3	123.1	137.7	127.9
September.....	123.3	144.2	110.5	123.3	137.6	128.4
October.....	125.8	144.3	111.2	123.5	137.8	129.4
November.....	125.5	144.5	112.5	123.5	138.3	129.6
December.....	125.3	144.6	112.6	123.5	138.3	129.6

The "Candy House" (made of fibreglas) in Storyland Village, the children's zoo of Edmonton, Alberta. The provision of entertainment is a large component of the service industries.



Co-operatives

The vitality and variety of the co-operative movement in Canada has stirred interest in many parts of the world. The volume of business carried on by Canada's 2,905 co-operative associations during the year ended July 31, 1959 totalled \$1,363,752,000, an increase of \$118,329,000 over the previous year.

Marketing co-operatives reported a \$65,000,000 increase in the sale of farm products to reach \$963,000,000 in 1959, a figure which represents more than 33 p.c. of the total value of all agricultural products marketed in Canada. By commodity groups the percentages handled by co-operatives were 59 p.c. of grains, 53 p.c. of honey, 43 p.c. of maple products, 30 p.c. of livestock, 28 p.c. of vegetables and fruit, 27 p.c. of dairy products and 13 p.c. of poultry and eggs.

Merchandise and supplies handled by co-operatives had a total sales volume of \$333,000,000, an increase of \$36,000,000. Feed, fertilizer and spray material led the sales with \$109,000,000, followed by food products with \$94,000,000 and petroleum products and auto accessories with \$58,000,000.

Business volume of fishermen's co-operatives increased by \$3,500,000 to reach \$25,300,000. The value of fish sold was \$21,000,000 and of fish supplies, \$4,000,000.

The number of service co-operatives increased from 801 to 846. Co-operatives included in this group provide a wide range of services, some of which are housing, rural electrification, medical insurance, transportation, recreation facilities, telephone service, custom grinding, seed cleaning, restaurants and boarding houses.



One of three meat packing plants of the Co-opérative Fédérée de Québec, a centralized co-operative that provides marketing and farm supply service to 375 affiliated locals with a membership of 50,000 farmers in the province of Quebec. It also operates a livestock commission sales service, a poultry and egg processing plant, a hatchery, sales services for butter, cheese, fruits, vegetables and seeds, four feed mills and warehouses, a grain elevator, farm machinery, miscellaneous equipment, petroleum products, and supplies credit and technical advisory services to farmers. Its total volume of business in 1959 was \$115,000,000. Co-operatives in Quebec market 30 p.c. of the livestock produced in the province; 20 p.c. of the poultry and eggs; 30-35 p.c. of the dairy products. They provide 30 p.c. of the grains and feed used in the province; 20 p.c. of the farm machinery; 30-35 p.c. of the fertilizer and pesticides.



This co-operative oil refinery outside Regina celebrated its 25th anniversary in 1960.

Highlights of the year included the incorporation of the Western Co-operative College in Saskatchewan and its application for registration in Manitoba and Alberta; the moving of the Co-opérative Fédérée de Québec's head office and all business facilities, with the exception of a packing house and a feed mill, to new headquarters in Montreal; the start of a \$3,000,000 expansion program for co-operative refineries in Saskatchewan and Manitoba; the opening of a poultry processing and cold storage plant near Sydney, N.S., a honey producers plant in Winnipeg, Man., a head office in Calgary, Alta., a vegetables plant in Richmond, B.C., a fertilizer factory in Ontario, and a new store and administration building in Prince Rupert, B.C. The Royal Commission on Price Spreads of Food Products recommended a federal act providing for the incorporation of co-operatives on an interprovincial or regional basis, and the Ontario Department of Agriculture announced its plan to establish a special branch to deal with co-operatives.

Co-operative Associations Reporting by Provinces for the Crop Year ended July 31, 1959

Province	Asso- cia- tions	Share- holders or Members	Volume of Business			Grand Volume of Business Including Other Revenue
			Marketing and Purchasing	Service	Fisher- men's	
	No.	No.	\$'000	\$'000	\$'000	\$'000
British Columbia.....	135	98,870	89,908	2,578	7,874	102,691
Alberta.....	603	271,198	203,009	6,971	—	211,888
Saskatchewan.....	605	486,670	329,493	558	179	338,073
Manitoba.....	121	139,331	104,093	308	—	106,431
Ontario.....	370	239,345	250,449	6,300	3,833	264,568
Quebec.....	755	152,503	188,200	5,700	3,873	198,107
New Brunswick.....	88	19,167	16,950	169	1,614	18,995
Nova Scotia.....	130	29,741	21,962	133	2,678	25,110
Prince Edward Island.....	26	6,264	6,445	2	1,032	7,576
Newfoundland.....	64	7,911	4,448	—	195	4,676
Interprovincial.....	8	113,514 ¹	81,316	25	3,883	85,637
Total 1959.....	2,905	1,564,514	1,296,273	22,744	25,161	1,363,752
Total 1958².....	2,883	1,580,089	1,194,911	13,781	21,836	1,245,423

¹ Associations and individuals.

² Revised.



A rapidly developing form of tourist accommodation is the motor hotel, which combines ease of parking and economical service with the comforts of a hotel.

Canada's Visitor Industry

As travel between Canada and other countries expands over the decades, so does its importance as an "invisible" factor affecting Canada's international balance of payments. Receipts attributable to visitors from foreign countries have grown from \$275,000,000 in 1950 to \$391,000,000 in 1959 while over the same period expenditures by Canadians on foreign travel have advanced from \$226,000,000 to \$598,000,000. Over the last nine years, the value of travel services "imported" has constantly exceeded the value of travel services "exported" to such an extent that the balance of payments on travel account between Canada and other countries has grown from an imbalance of \$6,000,000 in 1951 to \$207,000,000 in 1959. In that year, for example, Canadians spent more on travel than on the leading group of commodity imports, namely non-farm machinery and parts, while travel receipts for the year were exceeded only by the value of newsprint and wheat exported.

Some 29,900,000 visits were paid Canada by non-residents in 1959, while Canadians reciprocated with 28,100,000 visits to other countries. Of course, most of this travel took place between Canada and the United States and large numbers of the movements were made up of commuting and other local crossings.

Expenditures by residents of the United States travelling in Canada during 1959 amounted to \$351,100,000. Of this amount, automobile traffic accounted for \$191,800,000, an increase of \$20,000,000 over 1958, while non-automobile traffic contributed \$159,300,000 or an increase of almost \$22,000,000. While non-automobile entries numbered only 7,100,000 in comparison with 22,800,000 by automobile, expenditures and lengths of stay encountered in the former category are, on the average, greater than those found in the latter. Comparisons of certain classes of non-resident motor traffic in 1959 with similar categories of 1958 are impossible as a result of an administrative change initiated by the Department of National Revenue on October 1, 1959 for admitting such vehicles into Canada. Under the new procedure, non-resident motorists must obtain a traveller's vehicle permit upon entry and surrender it at the port of exit when leaving. Exceptions

to the rule are persons formerly designated as commuters, summer residents and locals, who are usually familiar to port officials and who may apply for a standing permit which must be shown each time they enter or leave Canada. Under the old procedure, motorists intending to remain within the jurisdiction of the port of entry and return to the United States via the same port within 48 hours were allowed to enter Canada without applying for a traveller's vehicle permit, but were required to deposit their vehicle's state registration card with Canadian Customs officials, a system which obliged them to travel in Canada without proof of ownership of their vehicle.

Motorists intending to remain in Canada on customs permits for 48 hours or more were only slightly affected by this change in regulations, and expenditures by the 3,300,000 visitors included in this group reached \$132,600,000, about 38 p.c. of total United States travel expenses in Canada for the year and an increase of \$12,300,000 over 1958. Most of the long-term automobiles originated in New York, Michigan and Ohio in that order, with Ontario receiving 55 p.c., Quebec 16 p.c., British Columbia 13 p.c., the Atlantic Provinces 8 p.c., the Prairie Provinces 7 p.c. and the Yukon Territory 1 p.c. of the total number. This division corresponds roughly to the percentage distribution by province of all United States travel expenditures in Canada during 1959.

Each type of non-automobile transportation, with the exception of rail, carried more Americans to Canada in 1959 than in 1958. Arrivals by rail, however, which numbered 619,000 (including in-transit) were in the majority while the smallest number (392,000) entered by bus. All categories showed increases over 1958, with receipts ranging from \$21,000,000 for boat travellers to \$50,700,000 for visitors arriving by plane. During the past few years plane travel has displayed remarkable consistency of growth.

Canadian re-entries from the United States in 1959 reached an all-time high of 28,000,000, 568,200 more than in 1958, while expenditures rose accordingly to a new record level of \$448,000,000 or an increase of \$35,000,000. Re-entries by automobile were most numerous, accounting for 22,200,000 of the total, with expenditures amounting to \$235,100,000. Part of the increase in automobile traffic may reflect the growth of passenger car registrations in Canada which in 1959 stood at 3,774,200, up 201,300 from 1958. Since 1950, registrations have increased from the equivalent of one car per every 7.3 persons resident in Canada to one for every 4.5 persons in 1959. Motorists remaining in the United States less than 48 hours constituted approximately 67 p.c. of the total re-entries yet only about 10 p.c. of the expenditures, while those staying 48 hours and over accounted for nearly 43 p.c. of the expenditures and only 12 p.c. of the re-entries. Longer visits coupled with a higher average expenditure per person per day for those in the long-term automobile class are the cause of this disparity.

Expenditures of Canadians travelling to the United States by non-automobile transportation have shown an upward trend over the past few years, rising from \$190,800,000 in 1957 to \$197,700,000 in 1958 and \$213,300,000 in 1959. Of the \$35,000,000 increase in Canadian travel expenditures in the United States during 1959, some \$16,000,000 was directly attributable to increased spending in the non-automobile category, particularly by plane and bus travellers.



The new propeller-turbine Vanguard made its first scheduled run on January 31, 1961. This 96-passenger, 425-m.p.h. airliner is used on short to medium-range routes in Canada, to the United States and south to Bermuda and the islands of the Caribbean.

Considering all types of traffic, regardless of length of visit, the average expenditure per Canadian traveller to the United States advanced somewhat in 1959. On a per capita basis, every Canadian spent \$25.37 in the United States, or from 6 to 7 p.c. more than in 1958, while the population of Canada has, on the other hand, advanced at about one-third of this rate.

A special survey of Canadian travel in the United States is undertaken each year by means of a mail questionnaire. Although data supplied by this particular survey pertain mainly to the long-term category of traffic, patterns of behaviour revealed have proven both useful and informative. For example, recreation appeared to be the most popular reason for journeying to the United States in 1959, with visiting friends or relatives second and business third. However, Canadians engaged in formal study in the United States spent the most per trip with an average of \$633 per person, while equivalent averages for other purposes were: recreation \$138; visiting friends or relatives \$91; and shopping \$74. The survey also showed that the three states receiving more Canadian visitors than any others were New York State with 27 p.c., Washington with 11 p.c., and Florida with 10 p.c.

New records were set in 1959 as re-entries of Canadian residents from trips overseas, both direct and via the United States, numbered almost 203,000, while visits of overseas residents to Canada approached 67,000. Canadians spent an estimated \$150,000,000 on travel overseas, \$21,000,000 in excess of the amount spent in 1958, while receipts from overseas visitors remained unchanged at \$40,000,000. As a result, the 1959 deficit in the overseas travel account assumed a new high of \$110,000,000 or almost 53 p.c. of Canada's \$207,000,000 travel deficit with all countries. Transportation costs figure prominently in overseas travel expenses, in many cases accounting for over one-half of the expenditures of both Canadian and overseas residents. Canadian carriers received approximately 39 p.c. of the oceanic transportation costs of Canadians travelling to and from North America directly, and over 50 p.c. of the total travel expenditures of visiting non-immigrants during 1959. Air travel continued to surpass boat travel as the preferred means of overseas transportation, accounting for 67 p.c. of total Canadian direct re-entries and 57 p.c. of direct non-immigrant arrivals in 1959. No doubt recent improvements in service and the introduction of economy flights have served to influence this trend.

The great majority of non-immigrant visitors to Canada come from the United States—29,880,826 in 1959. Other visitors totalled 41,616, of whom 55.4 p.c. came from the United Kingdom, 10.2 p.c. from other Commonwealth countries, 29.0 p.c. from other European countries and the remainder—5.4 p.c.—from other parts of the world.

It is expected that the flow of overseas visitors to Canada will increase in the near future as constant improvements are effected in the economies of many foreign nations and travel restrictions are gradually relaxed. In addition, rising personal incomes plus added time for leisure present more people with a greater opportunity to travel outside their own country. One rewarding by-product of the travel "industry", quite apart from economic effects, is the invaluable contribution made towards the furtherance of understanding and goodwill at the international level.

The balance of payments on travel account between Canada and other countries for 1954 to 1959 were, in millions of dollars:—

Item	1954	1955	1956	1957	1958	1959
Account with the United States—						
Credits.....	283	303	309	325	309	351
Debits.....	320	363	391	403	413	448
Net.....	-37	-60	-82	-78	-104	-97
Account with Overseas Countries—						
Credits.....	22	25	28	38	40	40
Debits.....	69	86	107	122	129	150
Net.....	-47	-61	-79	-84	-89	-110
Account with All Countries—						
Credits.....	305	328	337	363	349	391
Debits.....	389	449	498	525	542	598
Net.....	-84	-121	-161	-162	-193	-207



An innovation in dining-car service on the North American continent was the dinette car for casual meals at moderate prices introduced on trains in 1960.

Foreign Trade

In 1960 the total value of Canada's trade with other countries reached a new peak. According to preliminary returns, total exports rose approximately 5 p.c. over 1959 figures while imports remained at about the same high level as in the preceding year. This situation developed unevenly throughout the year, exports climbing irregularly but with lesser impetus at the close and imports tending to decrease in the latter half. Final figures, available for the first nine months of 1960, showed an increase in total trade of 3.8 p.c. over the January-September period of 1959 and a rise of 8.1 p.c. in domestic exports while imports fell fractionally. The import balance was reduced to a quarter of that for the same period of 1959 and was the lowest for several years.

Exports, Imports and Total Trade of Canada, 1955-60

(Millions of Dollars)

Period	Exports			Imports	Total Trade	Balance of Trade
	Domestic	Re-Exports	Total			
Calendar Year						
1955.....	4,258.3	69.4	4,327.8	4,567.8	8,895.5	-240.0
1956.....	4,760.4	73.3	4,833.8	5,547.0	10,380.7	-713.2
1957.....	4,788.9	95.3	4,884.1	5,473.3	10,357.5	-589.2
1958.....	4,791.4	102.9	4,894.3	5,050.5	9,944.8	-156.1
1959.....	5,021.7	118.6	5,140.3	5,508.9	10,649.2	-368.6
1960 ¹	5,266.4	128.9	5,395.3	5,495.8	10,891.1	-100.5
January—September						
1959.....	3,608.8	84.3	3,693.1	4,107.8	7,800.9	-414.7
1960.....	3,899.6	95.8	3,995.4	4,101.5	8,097.0	-106.1

Note: Figures revised to exclude settlers' effects, tourist purchases, private donations and other special non-commercial transactions.

¹ Preliminary.

International Background

Due to Canada's high rank amongst leading countries engaged in world trade, this nation is vitally concerned with economic developments in the international field. In recent years, world trade advanced sharply in 1955 and 1956 and continued to gain, but at a slower rate, in early 1957. Conditions were less favourable in the latter part of that year and in 1958 there was a considerable decrease in the value of world commerce. During 1959 and extending into the first part of 1960, international trade and economic activity increased amongst the more industrialized nations, particularly in the Western European countries, the United States, Canada and Japan. Less advance was noticeable among the under-developed countries, especially in those areas affected by social and political unrest in parts of Latin America, Africa and Asia.

By the latter part of 1960, although world trade remained at a high level, the rate of growth began to moderate. Commodity prices, especially of coffee, cocoa, sugar, base metals, wool and rubber, showed a downward trend during the last half of the year. The primary producing countries were thus faced with a considerable decline in the purchasing power of their exports in terms of necessary imports. Among the industrial countries there was also some slackening in the rate of expansion.



The twin cities of Fort William and Port Arthur, on the north shore of Lake Superior, are Canada's most westerly Great Lakes ports, 1,500 miles from tide-water but now made seaports by the St. Lawrence Seaway. Here grain, iron, pulp and paper are loaded for export.

In the United States, though exports rose considerably, there was increasing evidence by the fourth quarter of a gentle but broad decline in the economy and in the United Kingdom there was a slowdown in production and exports. Western Europe continued to enlarge its trade and manufacturing capacity although at a somewhat less rapid pace. Imports and industrial output in Japan rose throughout 1960 and exports increased over 1959 totals but the rate of advance was reduced towards the close of the year.

To counteract this levelling off in international activity, several of the principal trading countries, Canada included, have undertaken more intensive steps to promote export trade. In recent years, ample production facilities throughout the main industrial nations, many stemming from new or re-designed plants, coupled with a growing labour force, have ushered in a global era of sharper competition. This has replaced the situation, obtaining since the end of the war and until about the middle fifties, when international demand for many commodities exceeded the supply. Actual shortages existed in numerous lines and world productive capacity was insufficient.

There were further developments among the regional blocs of trading nations that have appeared in recent years. The first of these groups, the European Economic Community (EEC) or Common Market, set up by the Treaty of Rome, came into existence on January 1, 1958 and is composed of France, West Germany, Italy, the Netherlands, Belgium and Luxembourg.

These countries have made the third 10 p.c. reduction in their tariffs against each other, except for some rates on agricultural products, and have abolished most import licences and quotas between members. The economic advantages of a community of 165,000,000 people are becoming increasingly apparent and industrial production within the six countries climbed 12 p.c. in 1960.

After attempts failed to bring the majority of countries in Europe into a general European free trade area, the European Free Trade Association (EFTA), composed of the United Kingdom, Norway, Sweden, Denmark, Austria, Switzerland and Portugal, was brought into being by the Stockholm Convention of November 20, 1959. This group of nations represents a market of 90,000,000 persons. The participating countries have already reduced duties by 20 p.c. between members as from July 1, 1960 and hope within ten years to establish a free trade area amongst themselves. Each nation will fix its own tariff against the world.

The implications on world trade of these two powerful groups are manifold and efforts on a broad front are being made to prevent Western Europe from splitting into rival and competitive blocs. An important step was the formation of the Organization for Economic Co-operation and Development (OECD), set up in Paris on December 14, 1960. By including Canada and the United States, this new organization of 20 countries will take the place of the Organization for European Economic Co-operation (OEEC) founded in 1948, which was composed of 18 European nations and whose task of bringing postwar economic recovery to Western Europe has largely been accomplished. The main objectives of the OECD will be to encourage economic and financial growth within member countries, to contribute to the sound expansion of the under-developed countries and to work for an increase in world trade on a multilateral and non-discriminatory basis. Membership by Canada and the United States underlines the interdependence of the economies of the Atlantic countries.

In Latin America, two trade groups are in the formative stage. The Latin American Free Trade Area (LAFTA) set up by a convention, initialled in Montevideo on February 18, 1960 but which awaits ratification by the respective governments, seeks to bring Argentina, Brazil, Chile, Mexico, Paraguay, Peru and Uruguay into a free trade association. Later Colombia and Ecuador indicated their wish to join the group. The intention of the association is to remove all tariffs and trade barriers between members within 12 years and thus to increase their productivity and prosperity. A treaty signed in Managua on December 10, 1960 between El Salvador, Guatemala, Honduras and Nicaragua created a Central American Common Market. Arrangements were made for future participation by Costa Rica. The treaty provides for the abolition of duties on products shipped within the integrated area and the eventual establishment of a common tariff for the rest of the world.

During 1960, progress was continued toward the liberalization of international trade and payments arrangements. The free world trading nations, associated in the General Agreement on Tariffs and Trade (GATT) took further steps towards the reduction of duties and the removal of import restrictions, in keeping with improvements in their financial and economic conditions. The principles of a common tariff applicable to all nations whose goods enter the European Common Market have been largely agreed

to by EEC members and negotiations are being conducted towards its implementation with those countries adhering to the GATT.

In the international financial field, the World Bank, the International Monetary Fund and the International Finance Corporation were joined in the autumn of 1960 by the International Development Association. This world organization will help finance economic expansion in the under-developed nations by lending money on easier terms than the World Bank.

The general balance of payments position among the principal trading nations has been recently characterized by continuing deficits in the international payments balance of the United States and large surpluses in those of a number of European countries. Short term investment money moved to Europe in significant quantities since interest rates there were higher. There was a considerable loss of United States gold reserves. The price of gold rose sharply in October but levelled off by the end of 1960. Foreign holdings of dollars continued to increase in 1960.

According to figures published by the International Monetary Fund, world trade in 1959 increased about 6 p.c. over 1958 figures but did not quite reach the record level of 1957. In absolute terms, Canada was ranked fourth following the United States, the United Kingdom and the Federal Republic of Germany. In exports per capita, Venezuela ranked the highest, followed by New Zealand and Belgium and Luxembourg, with Canada in fourth place. Norway lead in imports per capita, Switzerland and Belgium and Luxembourg followed and Canada was fourth. However, in total trade per capita, Canada was third, being only surpassed by Belgium and Luxembourg and Switzerland.

Leading Countries in World Trade, 1958 and 1959

Country ¹	Exports, f.o.b.		Imports, c.i.f.		Total Trade	
	1958	1959	1958	1959	1958	1959
Value of Trade (Millions of U.S. Dollars)						
United States.....	17,862 ²	17,576 ²	13,986	16,548	31,848	34,124
United Kingdom.....	9,395	9,692	10,583	11,175	19,978	20,867
Germany, Federal Republic of.....	8,807	9,804	7,361	8,480	16,168	18,284
Canada.....	5,440	5,652	5,790	6,244	11,230	11,896
France.....	5,122	5,615	5,604	5,088	10,726	10,703
Netherlands.....	3,218	3,607	3,625	3,940	6,843	7,547
Japan.....	2,877	3,457	3,033	3,600	5,910	7,057
Belgium and Luxembourg.....	3,046	3,295	3,129	3,442	6,175	6,737
Italy.....	2,536	2,895	3,169	3,341	5,705	6,236
Sweden.....	2,088	2,206	2,366	2,405	4,454	4,611
World Trade ³	96,068	101,660	100,727	106,890	196,795	208,550
Trade per Capita (U.S. Dollars)						
Belgium and Luxembourg.....	325	349	334	365	659	714
Switzerland.....	297	321	329	367	626	688
Canada.....	319	324	340	358	659	682
Netherlands.....	288	318	324	347	612	665
Denmark.....	279	307	297	352	576	659
Trinidad and Tobago ⁴	292	318	304	319	596	637
New Zealand.....	306	352	348	278	654	630
Sweden.....	282	296	319	323	601	619
Venezuela.....	367	364	253	242	620	606
Norway.....	211	228	371	372	582	600

¹ Countries ranked by total trade and total trade per capita in 1959. ² Includes military aid extended to other countries. ³ Exclusive of China, U.S.S.R., and eastern European countries not currently reporting trade but including countries not listed above. ⁴ In Canadian trade statistics included with West Indies Federation. Sources: International Monetary Fund, International Financial Statistics, September 1960; and United Nations Statistical Office, Population and Vital Statistics Report, Series A, Vol. XII, Nos. 2 and 3.

Canadian Trade Trends

Sharp gains in overseas exports with imports remaining at a high level were the main features of Canadian foreign trade during the first nine months of 1960. Shipments both to the United Kingdom and to other Commonwealth countries rose over 20 p.c. and to Western Europe by 30 p.c. Domestic exports to all other main trading areas also increased, with the exception of fractional declines in those to the United States and South America.

The principal components of Canadian export trade are drawn from the forests, farms and mines of the nation. Shipments of wood, wood products and paper, agricultural and vegetable products and non-ferrous metals and products together account for more than two-thirds of total exports. Newsprint, wheat, lumber, woodpulp, uranium, aluminum, nickel, copper, iron ore and asbestos are the leading commodities. The majority of these showed gains during the first nine months of 1960. Newsprint continued to occupy first place and shipments were 5.9 p.c. above those for January-September 1959. Lumber sales rose 7.4 p.c. and woodpulp exports advanced by 4.3 p.c. Although world trade in wheat increased, Canadian exports were 11.3 p.c. less in the first nine months of 1960 than in the corresponding period of the preceding year. Barley and wheat flour shipments declined considerably.

Amongst non-ferrous metals, shipments of uranium ores and concentrates, due to decreased deliveries to the United States, were 11.8 p.c. less in January-September 1960 but nickel, aluminum, copper and zinc exports were all above 1959 totals for the same nine-month period. In other principal commodities, crude petroleum, rolling-mill products and non-farm machinery advanced substantially. Iron ore, asbestos and fertilizer exports also rose appreciably. Shipments of farm implements and machinery, however, declined considerably. The average export price level moved up fractionally each quarter in 1960 so that the physical volume of exports in the nine months expanded slightly less than their value.

The United States is the principal export market for Canadian forestry products and these account for over 40 p.c. of total shipments to that country. Increased amounts of newsprint and woodpulp were sent to the United States during the first nine months of 1960 but shipments of lumber and timber were somewhat less than in the same period of the preceding year. There was a decline of 11 p.c. in the exports of uranium ores and concentrates due to deferral of deliveries arising from the non-renewal of contracts. In order of value, iron ore shipments rose, fish and fish products were fractionally less while crude petroleum exports advanced by more than a quarter. Nickel shipments were a fifth less while copper sales were two-thirds greater and exports of farm implements to the United States declined nearly a quarter. The movement amongst other main commodities was irregular, exports tending to decrease in many lines towards the latter part of the year.

During the January-September period of 1960, exports to the United Kingdom reached a postwar record for the first nine months of any year and were more than a fifth above shipments for the same period last year. The United Kingdom made larger purchases from Canada of non-ferrous metals, wood and paper products and iron and its products than in the first nine months of the preceding year. In non-ferrous metals, copper exports were greater by

FOREIGN TRADE

a half, nickel shipments gained by three quarters and aluminum rose considerably. Lumber and timber shipments doubled, newsprint went up by a quarter and woodpulp nearly a third over 1959 totals for nine months and there were significant advances for pigs and ingots, rolling-mill products and certain chemicals. However, deliveries of wheat, which accounted for approximately 15 p.c. of Canadian exports to the United Kingdom, wheat flour, fish products and barley declined.

Gains showed in exports to other countries of the Commonwealth during the period of January-September 1960, as compared to the same period in the preceding year. Shipments to Hong Kong were more than two and a half times as great while those to Australia and New Zealand nearly doubled. Wheat deliveries to India, Pakistan, Ireland and the Union of South Africa declined considerably, bringing the totals of Canadian exports to those countries below the 1959 levels. Increased shipments of lumber and timber, woodpulp, newsprint, engines, aluminum and copper and products contributed appreciably to the overall gain in trade with Commonwealth countries.

Exports to Western Europe increased substantially, the total for the first nine months of 1960 being nearly a third greater than for the same period of the preceding year. In particular, trade advanced with France, the Federal Republic of Germany, Norway, Belgium and Luxembourg, the Netherlands, Italy and Sweden. Shipments of non-ferrous metals were much increased, reflecting the strength of industrial activity in those countries. Exports of aluminum and products advanced to Belgium, Sweden and France and more than doubled to Germany, Italy and Spain. Copper shipments were higher to Germany, France, Norway, the Netherlands and Switzerland, while nickel sales increased to Belgium, France, Germany, Italy, Norway and Sweden. Asbestos shipments were up to Belgium, Germany and France while somewhat less to the Netherlands. Sales of many other semi-fabricated commodities also advanced.

Canadian trade to the Far East increased by more than 30 p.c., Japan being the principal destination. Larger sales of wheat, seeds, iron ore, non-farm machinery, aluminum and products, copper and asbestos contributed to Japan holding her current place as Canada's third largest customer. Sales to Middle East countries advanced by a fifth in the first nine months of 1960. Exports to Central and South America remained at almost the same level as in the corresponding period of 1959, the first showing a slight rise and the second a small decrease.



A prize-winning pig, one of a number imported by Swedish breeders, exchanges appraising stares with airport officials while waiting for his flight.

Principal Domestic Exports, 1957-60

Commodity ¹	Calendar Year			January-September	
	1957	1958	1959	1959	1960
	\$'000	\$'000	\$'000	\$'000	\$'000
Newsprint paper.....	715,490	690,209	722,271	522,657	553,329
Wheat.....	380,415	446,078	441,830	322,173	285,819
Lumber and timber.....	282,690	293,600	323,717	246,405	264,604
Uranium ores and concentrates.....	127,934	276,506	311,904	230,623	203,433
Woodpulp.....	292,406	285,449	311,253	232,317	242,338
Aluminum, primary and semi-fabricated	229,386	222,442	230,683	160,454	195,695
Nickel, primary and semi-fabricated....	248,253	212,580	226,857	158,247	197,358
Copper, primary and semi-fabricated....	147,247	135,021	158,827	107,341	163,837
Iron ore.....	152,281	107,674	157,814	110,909	127,920
Asbestos, unmanufactured.....	107,058	90,745	110,431	78,011	83,185
Farm implements and machinery (except tractors) and parts.....	67,339	93,829	110,205	89,874	69,229
Whisky.....	66,994	70,276	78,262	52,820	51,052
Petroleum, crude and partly refined....	140,975	73,044	74,541	55,566	70,612
Fish, fresh and frozen.....	63,186	70,898	66,523	49,823	50,812
Barley.....	67,522	78,118	66,310	48,366	41,861
Wheat flour.....	61,175	69,398	64,903	47,925	44,745
Zinc, primary and semi-fabricated.....	64,921	55,385	55,097	41,003	44,606
Rolling-mill products (steel).....	33,043	31,833	53,509	21,634	50,371
Fertilizers, chemical.....	48,958	46,476	48,792	35,073	38,947
Machinery (non-farm) and parts.....	57,177	46,881	48,403	33,305	49,883

¹Commodities ranked by value of exports in 1959.

Imports, which had declined somewhat in 1957 and more sharply in 1958, increased considerably in 1959. This rising trend continued into the early part of 1960 but slowed in the second quarter and was reversed in the third quarter. The total of imports into Canada for January-September 1960 was fractionally less than that for the same period of 1959. Since the average level of import prices rose slightly, the physical volume of imports declined somewhat more than their value.

For many years iron and its products have accounted for over a third of total imports and non-farm machinery and parts have topped the list of principal commodities. Automobile parts, crude and partly refined petroleum, electrical apparatus, passenger cars, tractors and parts, engines and boilers, rolling-mill products (steel) and farm implements and machinery have followed, the order of importance shifting slightly. Import figures of leading commodities for the first nine months of 1960, as compared to totals for January-September 1959, indicate an almost equal division between increases and declines. Amongst others, passenger automobiles, aircraft, cotton fabrics and apparel showed considerable gains, due mainly to fair-sized arrivals in the beginning of the year. Tractors and parts, sugar, pipes and tubing and rubber went down.

Approximately two thirds of all merchandise brought into Canada comes from the United States. Iron and products is the principal group, accounting for about 45 p.c. of imports from that country, and machinery is the leading commodity. In addition, automobile parts, farm implements and machinery, electrical apparatus, engines and boilers, rolling-mill products and airplanes are imported in large amounts. The United States supplies important quantities of coal and petroleum products. There are substantial imports of cotton products, books and paper products, plastics and rubber, also of fruits and

Coffee beans being dried and turned in the sun in Costa Rica. Canada imports more than \$50,000,000 worth of coffee a year.



vegetables. For the first nine months of 1960 the import trend among leading commodities from the United States was uneven, declines being slightly more numerous than advances.

The United Kingdom supplies about one tenth of Canada's imports and iron and its products account for more than 40 p.c. of the total. Automobiles, machinery, engines and boilers, rolling-mill products, farm implements and pipes and tubes all form part of this important group. In the period January-September 1960, imports of automobiles, the leading commodity, increased by more than a third over the same nine months of the preceding year. Wool products were next and showed a similar gain. Most iron products increased but imports of electrical apparatus fell considerably. Although there were more gains than losses, the trend became downward at the close of the period.

Imports from other Commonwealth countries advanced during 1960. The West Indies Federation supplied more than 20 p.c. of this merchandise and Australia, Malaya and Singapore and India over 10 p.c. each. During the first nine months of 1960, compared to the same period of 1959, there was a considerable increase in imports of bauxite from Jamaica and sugar from Fiji. Cocoa from Nigeria and Ghana, coffee from British East Africa and tea from Ceylon all showed gains. Wool shipments from Australia and New Zealand increased. Sugar shipments from Mauritius, Australia, Jamaica and British Guiana were less.

Imports from Western Europe are mainly finished products of considerable value. Automobiles, rolling-mill products, electrical apparatus and machinery are amongst the leading commodities. Over the first nine months of 1960, imports of machinery from Germany, Italy, Sweden and France and electrical apparatus from the Netherlands advanced, while rolling-mill products from Belgium and Germany, cars from France and electrical apparatus from Germany and Switzerland all declined considerably.

Over three quarters of imports from South America are made up of petroleum and products from Venezuela. There are large shipments of bananas from Ecuador and of coffee from Brazil and Colombia. Central America sends bananas, coffee and cotton to Canada but total shipments for the first nine months of 1960 declined by a third. Middle East shipments

were less with the exception of petroleum from Iran. Japan increased deliveries to Canada in a wide range of commodities. Imports of rolling-mill products and electrical apparatus advanced considerably but shipments of machinery declined.

Principal Imports, 1957-60

Commodity ¹	Calendar Year			January-September	
	1957	1958	1959	1959	1960
	\$'000	\$'000	\$'000	\$'000	\$'000
Machinery (non-farm) and parts.....	631,599	532,916	585,235	441,525	448,101
Automobile parts (except engines).....	260,075	240,526	288,596	224,849	223,495
Petroleum, crude and partly refined.....	305,557	278,540	277,495	208,778	211,162
Electrical apparatus, n.o.p.....	249,328	240,112	269,402	200,512	195,904
Automobiles, passenger.....	106,596	141,543	199,601	145,905	160,511
Tractors and parts.....	127,658	117,290	172,069	138,444	103,702
Engines and boilers.....	138,451	134,603	135,002	101,941	103,074
Rolling-mill products (steel).....	221,257	147,049	131,263	100,601	104,780
Farm implements and machinery (except tractors) and parts.....	74,572	81,007	101,752	85,597	82,712
Fuel oils.....	76,204	64,886	77,903	46,773	44,932
Aircraft and parts (except engines).....	93,691	94,836	76,745	62,657	70,116
Cotton fabrics.....	65,049	66,168	70,058	51,639	56,817
Paperboard, paper and products.....	62,027	65,478	68,051	50,408	51,526
Coal, bituminous.....	90,692	67,067	65,115	47,950	46,788
Apparel (except hats) of all textiles.....	47,034	48,903	61,830	46,952	51,369
Synthetic plastics, primary forms.....	49,737	54,891	61,024	45,492	47,606
Sugar, unrefined.....	75,632	58,578	56,605	43,818	35,309
Pipes, tubes and fittings.....	147,727	88,371	55,305	43,444	38,489
Parcels of small value.....	51,982	53,583	54,514	40,015	39,764
Rubber, crude and semi-fabricated.....	39,101	30,779	52,063	37,873	33,418

¹ Commodities ranked by value of imports in 1959.

Leading Trade Partners. Over 60 p.c. of Canada's international trade results from the exchange of goods with the United States. In 1960 approximately 56 p.c. of Canadian exports were shipped to that country and around 67 p.c. of imports were provided by the United States. The proportion of shipments to overseas destinations increased, particularly to the United Kingdom and Western European nations while the share of Canadian goods taken by the United States declined. The United Kingdom was the destination of some 17 p.c. of exports and supplied almost 11 p.c. of imports. Other Commonwealth countries purchased over 6 p.c. of Canada's shipments and supplied roughly 5 p.c. of arriving merchandise. Western European countries took around 11 p.c., Asian lands approximately 4 p.c. and Latin American countries about 3.8 p.c. of exports while those areas supplied approximately 6.5 p.c., 2 p.c. and 6 p.c. respectively, of commodities brought into this country.

Following the United States and the United Kingdom, Japan and the Federal Republic of Germany were the third and fourth most important markets for Canadian goods both in 1959 and for January-September 1960. Next in line, and each purchasing Canadian goods in excess of \$50,000,000 in 1959, were Norway, Belgium and Luxembourg, Australia, the Netherlands, India and the Union of South Africa. During the first nine months of 1960, however, this order shifted and Australia became the fifth leading market for Canadian goods, followed by Norway, France, Belgium and Luxembourg, the Netherlands and the Union of South Africa.

In imports, after the United States and the United Kingdom, the chief sources were Venezuela, Federal Republic of Germany and Japan in both

1959 and in the first nine months of 1960. Sizeable amounts of goods were obtained from France, the West Indies Federation, the Netherlands Antilles, Belgium and Luxembourg, Australia, Italy, the Netherlands, India, Saudi Arabia, Malaya and Singapore and Mexico.

Domestic Exports to Leading Countries, 1957-60¹

Country ²	Calendar Year			January-September	
	1957	1958	1959	1959	1960
	\$'000	\$'000	\$'000	\$'000	\$'000
United States.....	2,846,646	2,808,067	3,083,151	2,230,896	2,224,945
United Kingdom.....	720,898	771,576	785,802	558,239	670,932
Japan.....	139,082	104,853	139,724	100,641	129,451
Germany, Federal Republic of....	151,508	201,134	129,345	90,638	112,866
Norway.....	55,491	55,849	62,308	46,024	54,057
Belgium and Luxembourg.....	60,193	69,531	56,127	40,016	47,013
Australia.....	48,662	52,562	53,929	38,738	72,464
Netherlands.....	69,553	74,721	53,849	36,734	43,412
India.....	28,902	78,994	53,654	37,165	26,871
Union of South Africa.....	48,322	49,959	51,242	42,359	40,224
Venezuela.....	39,661	43,480	45,833	33,665	26,036
France.....	57,031	44,688	43,157	26,015	53,341
West Indies Federation.....	39,935	35,543	39,714	27,227	27,903
Italy.....	62,685	29,718	31,717	20,581	34,580
Mexico.....	42,477	31,429	27,633	20,932	24,365
Switzerland.....	24,894	29,243	25,728	19,692	19,994
Colombia.....	14,587	13,813	17,668	13,247	12,476
Pakistan.....	11,308	15,311	17,317	13,368	5,931
Poland.....	16,632	560	15,631	13,847	15,457
Cuba.....	16,846	17,549	15,222	11,261	7,502

¹ Figures revised to exclude settlers' effects, tourist purchases, private donations and other special and non-commercial transactions.

² Countries ranked by value of exports in 1959.

Imports from Leading Countries, 1957-60¹

Country ²	Calendar Year			January-September	
	1957	1958	1959	1959	1960
	\$'000	\$'000	\$'000	\$'000	\$'000
United States.....	3,887,391	3,460,147	3,709,065	2,789,805	2,780,459
United Kingdom.....	507,319	518,505	588,573	434,089	442,169
Venezuela.....	248,069	209,538	204,582	152,080	148,011
Germany, Federal Republic of....	92,527	102,644	123,905	89,695	92,195
Japan.....	61,396	70,091	102,669	76,107	83,645
Saudi Arabia ³	34,315	68,021	70,725	52,812	27,459
France.....	34,987	40,007	56,940	42,977	36,981
West Indies Federation.....	56,281	40,794	50,441	40,413	41,690
Netherlands Antilles.....	39,259	39,453	47,120	27,863	20,360
Belgium and Luxembourg.....	43,681	35,759	44,786	31,087	30,225
Australia.....	28,572	32,755	41,080	31,478	21,858
Italy.....	32,536	32,150	37,656	26,114	29,197
Mexico.....	20,987	31,888	34,201	28,725	16,327
India.....	29,185	27,655	29,221	21,132	21,065
Netherlands.....	21,690	26,905	29,154	20,746	22,647
Malaya and Singapore.....	27,313	19,863	28,644	18,912	21,091
Brazil.....	35,276	27,419	28,479	20,231	18,068
Switzerland.....	24,053	26,491	24,514	17,820	17,067
Sweden.....	15,339	13,939	18,077	13,028	14,908
British Guiana.....	20,988	20,627	18,033	14,005	12,082

¹ Figures revised to exclude settlers' effects, tourist purchases, private donations and other special and non-commercial transactions.

² Countries ranked by value of imports in 1959.

³ Prior to January 1, 1960 totals for Bahrain and Kuwait were included with Saudi Arabia.

Canadian Balance of International Payments. The flows of commodities into and out of Canada by train, truck, ship, aircraft and even pipeline, great as they are, account for only about half of Canada's international transactions. There are substantial receipts by Canada arising from the provision of services to non-residents, including the income on Canadian capital invested abroad, and there are even greater payments by Canada for similar services provided by non-residents. In addition to the international exchange of goods and services, there is a vast amount of investment, borrowing, and lending, between Canada and other countries.

Statements of the balance of payments reflect all these transactions. The current account shows exchanges of goods and services, the flow of real resources, and the capital account shows the transactions changing Canada's external assets and liabilities, the flow of financial resources.

Outstanding among the features of Canada's balance of payments in recent years are both the deficits which have arisen from the excess of purchases of goods and services over sales of goods and services, and the capital inflows for private investment in industry which have been heavily supplemented at times by borrowing by provinces and municipalities. The capital inflows have been associated with growth and development and have, in turn, contributed to the current deficits by augmenting demands for imported goods and services. There have been deficits with one exception each year since 1950, and they have exceeded \$1,000,000,000 in each of the last five years. The periods of greatest relative imbalance occurred in the latter part of 1956 and in the first half of 1957, a period of intense economic activity. Over subsequent years the deficit has varied considerably in size but has continued to be far larger than earlier.

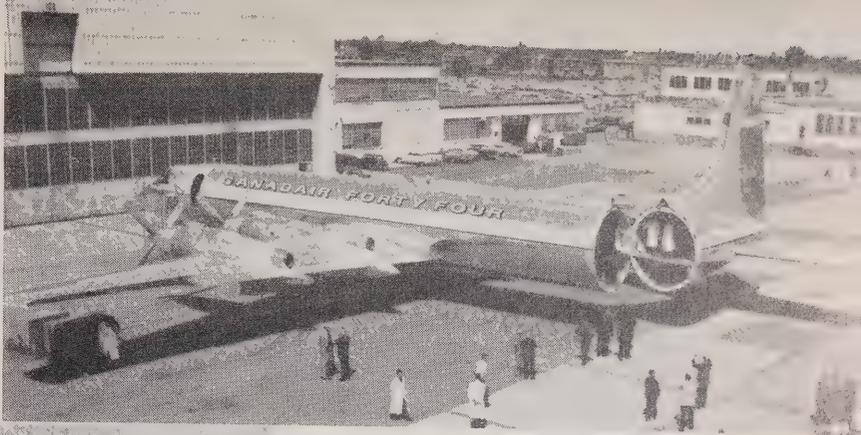
The changes in the current account deficit have reflected mainly variations in demands for goods, for the balance arising from merchandise trade has fluctuated sharply with varying conditions at home and abroad. But most of the current account deficit arises from the non-merchandise transactions, the deficits from which have been persistent and growing. In both 1959 and 1960 non-merchandise transactions gave rise to a deficit of more than \$1,000,000,000.

Many factors have contributed to the growth of this highly significant element in Canada's international transactions. To no small extent an expansion in the volume and range of expenditures on services is a concomitant of high incomes and standards in the contemporary world. Rising

A Canadian tea-taster at work. Canada depends on imports for many of her staple foods such as coffee, sugar, tea and spices.



1960, two great ships—
one to sail the seas and
one to fly through the air
—were manufactured for
export. The Canadair
Forty Four is the first swing-
tail cargo airplane ever
built. It can be loaded
mechanically in one-fifth
of the normal time needed
for conventional piece
loading. The replica of
the *Bounty* was made in
Nova Scotia for an Ameri-
can film company.



personal incomes in Canada have opened widening opportunities for spending on non-resident services including travel. The changing population has led to rising remittances by those having family origins outside of Canada. Joint defence undertakings and contributions to under-developed areas have added to Canadian expenditures abroad. To the increasing non-merchandise transactions accompanying growing incomes in Canada and changing international responsibilities of the Canadian nation must be added the transactions which spring from the spreading network of international investments and from Canada's rising balance of international indebtedness.

The largest element in the deficit from non-merchandise transactions has been interest and dividend payments, reflecting part of the cost of financing the accumulated deficits of earlier years. Together with miscellaneous investment income, these transactions have recently resulted in net payments by Canada of \$500,000,000 annually. Some of the effects of the massive imports of non-resident capital have yet to be fully felt. Large parts of the income accruing to non-residents have been retained for investment in Canada, while many of the new developments have not yet matured to the point where income remittances may be expected. Growing international financial relationships have also been reflected in increasing payments by branch and subsidiary companies for administrative and other services supplied from abroad. Payments of this kind have been rising and are now well over \$100,000,000 annually.

The financing of recent large external deficits has been accomplished on the whole with little or no visible strain on the Canadian balance of payments. Over most of the period the capital inflows which served this purpose were of a long-term character, taking the form mainly of direct investment in branches

and subsidiaries in Canada by United States and other non-resident business firms, particularly in petroleum, mining, and other resource industries. Direct and portfolio equity investment has been buttressed at times by large increases in foreign-held funded debt in response to divergent interest rate structures in Canada and in the United States. New issues of Canadian securities sold abroad were particularly important from 1956 through mid-1960, with provincial governments and municipalities having extensive recourse to foreign capital markets. Movements of short-term capital have also occurred on a comparatively large scale, but the inflows and outflows have tended over time to offset each other. Persistent inflows of capital have kept the Canadian dollar at a premium on the world's exchange markets for nearly a decade.

International Investment Position. The substantial growth in the investment of foreign capital in Canada during the past decade has been the principal factor in increasing Canada's net international indebtedness from \$4,300,000,000 at the end of 1950 to nearly \$17,000,000,000 at the end of 1960. At the latter date, Canada's gross external liabilities amounted to well over \$25,000,000,000, about half of which represented direct foreign investment in Canadian enterprises controlled by non-residents. A substantial part of the remainder covered portfolio investment in Canadian corporations by non-residents. At the same time Canada's gross external assets totalled over \$9,000,000,000 of which nearly \$4,000,000,000 was represented by government loans to overseas countries, subscriptions to international financial organizations and holdings of gold and foreign exchange.

Dependence on external sources for some types of capital, together with the special advantages often associated with this capital, have led Canada to a degree of foreign ownership and control of industry unique in economic history. By the end of 1958 foreign investment accounted for 64 p.c. of the ownership of the Canadian petroleum and natural gas industry and represented control of 75 p.c. The mining industry was 56 p.c. foreign-owned and 60 p.c. foreign-controlled. Manufacturing other than petroleum refining was 51 p.c. foreign-owned and 57 p.c. foreign-controlled. The degree of foreign ownership and control varied considerably in different branches of manufacturing. Other areas of Canadian wealth such as utilities, merchandising, housing and social capital are, of course, Canadian-owned and controlled to a much larger extent than are the petroleum, mining or manufacturing industries.

A very substantial part of foreign capital in Canada now takes the form of equity investment and, as a result of the retention of earnings, foreign investments increase each year by some hundreds of millions of dollars more than the capital actually imported. Indeed, during the post war years the earnings accruing to non-resident investors but voluntarily retained in Canada to finance expansion have amounted to well over \$3,500,000,000. In addition, actual transfers of interest and dividends have, in recent years, approached \$700,000,000 annually. The significant part of the corporate profits in the Canadian economy which accrue to non-residents is a measure of the important place of foreign capital in the development of this country.

Department of Trade and Commerce. Trade promotion is the prime function of the Department of Trade and Commerce, which provides businessmen with a wide variety of services that can assist in securing sales for their respective products at home and abroad. Specialists in Ottawa are supported by a corps of trade commissioners in 49 countries. They are familiar with economic conditions in their respective territories and provide information on potential markets for Canadian commodities, such as foreign competition, import controls, tariff provisions, shipping facilities and labelling regulations.

Trade commissioners can assist in securing reliable agents, and provide introductions to visiting businessmen. They return home periodically and, during tours through Canada, discuss specific problems with firms seeking their guidance. These tours also enable foreign service officers to familiarize themselves with the economic development of Canada.

Arrangements were made for 110 trade commissioners from 63 posts throughout the world to attend an Export Trade Promotion Conference in Ottawa during the first three weeks of December 1960.



An innovation in export trade promotion was the three-week conference arranged by the Department of Trade and Commerce, during which 110 Canadian trade commissioners from 49 countries returned to Ottawa to discuss trade prospects with representatives of more than 1,100 firms in a total of 12,000 interviews. Here they are assembled in the Supreme Court Building, headed by the Minister of Trade and Commerce, the Deputy Minister and the three Assistant Deputy Ministers.



A section of Canada's display at the Ideal Home Exhibition in London, where the many products on view included an attractive Canadian Arctic fox evening cloak, women's wear, a baby grand piano, luggage and toys. During 1960 there was a marked increase in the export of women's wear to Britain.

Reports on conditions in their respective territories, market opportunities, tariff changes and specific industries of interest to Canadian firms are prepared by trade commissioners for publication in the Departmental periodical, *Foreign Trade* which also carries a wealth of other commercial intelligence of considerable value to exporters.

Commodity officers, in Ottawa, familiarize themselves with the many firms in a position to meet the requirements of consumers in other lands and relay inquiries received through trade commissioners to those best qualified to meet the demand. Commodity officers also encourage firms with no previous experience of external trade, and firms with new products or special services, to explore the possibilities of markets in the United States and overseas. About 37 p.c. of Canada's exports in 1959 consisted of items classified as fully or chiefly manufactured, including newsprint and wheat flour, while 29 p.c. consisted of partially manufactured products, such as asbestos fibres. These figures indicate the ability of Canadian firms to meet competition in foreign markets and illustrate the desirability of maintaining a close relationship between industry and the commodity officers concerned.

Commodity officers in the Agriculture and Fisheries Branch perform similar functions. They also maintain close connections with the Departments of Agriculture and Fisheries, together with the trade associations concerned, in an effort to stimulate the sale of farm and fisheries products in other countries. Information on government policy, consumption and market trends in other lands is obtained from trade commissioners and made available to these departments, so they in turn may assist the farmer and fisherman in securing a larger share of the foreign market for foodstuffs of Canadian origin.

The International Trade Relations Branch of the department is responsible for the review of trade relations with all countries, the preparation of material for trade and tariff negotiations, participation in conferences under the General Agreement on Tariffs and Trade, and the interpretation and clarification of foreign regulations for Canadian exporters. The Economics Branch analyses the general economic situation in Canada.

The Trade Publicity Branch is closely associated with other branches of the department in providing information of particular interest to businessmen, at home and abroad, in an effort to stimulate the demand for Canadian products. It prepares periodicals and a wide range of publications for use by trade commissioners, at trade fairs and in connection with trade missions. It is responsible for publicity of a trade promotional character and advertising in appropriate media.

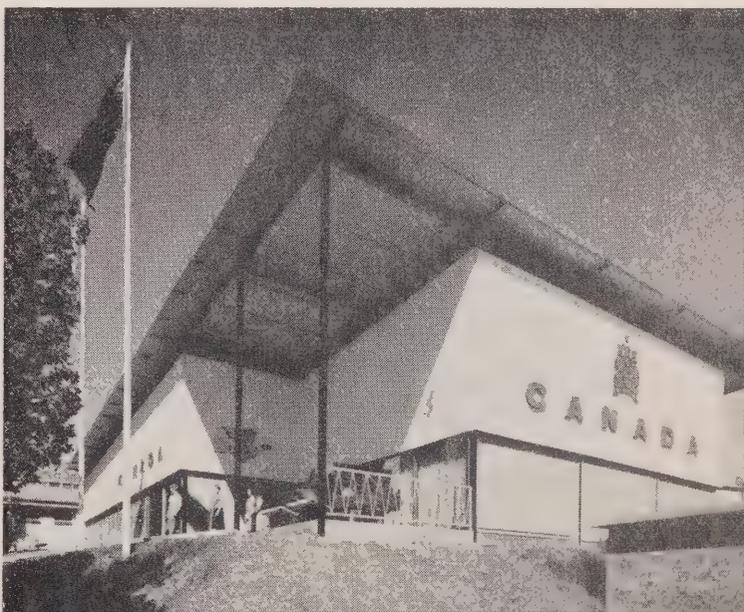
The Export Credits Insurance Corporation, which reports to Parliament through the Minister of Trade and Commerce, insures Canadian exporters against losses arising from credit and political risks. These include insolvency or protracted default on the part of a buyer, exchange restrictions in the buyer's country, thereby preventing the transfer of funds to Canada, cancellation of an import licence or the imposition of restrictions on the import of goods not previously subject to restriction, the occurrence of war between the buyer's country and Canada or the outbreak of revolution, and additional transport or insurance charges occasioned by the interruption of a voyage or the diversion of a ship carrying Canadian commodities.

The Domestic Commerce Service is primarily concerned with the provision of assistance to industries interested in the domestic market. The Depreciation Certification Branch is responsible for the certification of assets used to produce new Canadian products.

The Industrial Development Branch is concerned with the establishment of new industries in Canada, the utilization of excess manufacturing capacity, and the development of new products, including those suitable for export. It maintains close liaison with provincial, municipal and other agencies concerned with industrial development. This branch also provides information on imports, new products, advice on Canadian regulations affecting new enterprises, and listings of new industries.

The Industrial Design Branch is concerned with fostering improved industrial designs. The Small Business Branch studies the problems of small business in Canada, and recommends measures that should be taken to meet them. It co-operates with other federal departments, provincial and municipal governments in providing assistance to small enterprises, including the provision of statistical, technical and other information on management, production and marketing. The Standards Branch calibrates and inspects commercial measuring devices in the field of general trade, and in the distribution of gas and electricity. It also regulates and inspects the labelling and marking of certain commodities.

Canada takes every opportunity to display its export products at trade fairs and exhibitions. This is the exterior of the Canadian Pavilion at the Union Exposition in Johannesburg in April, 1960.

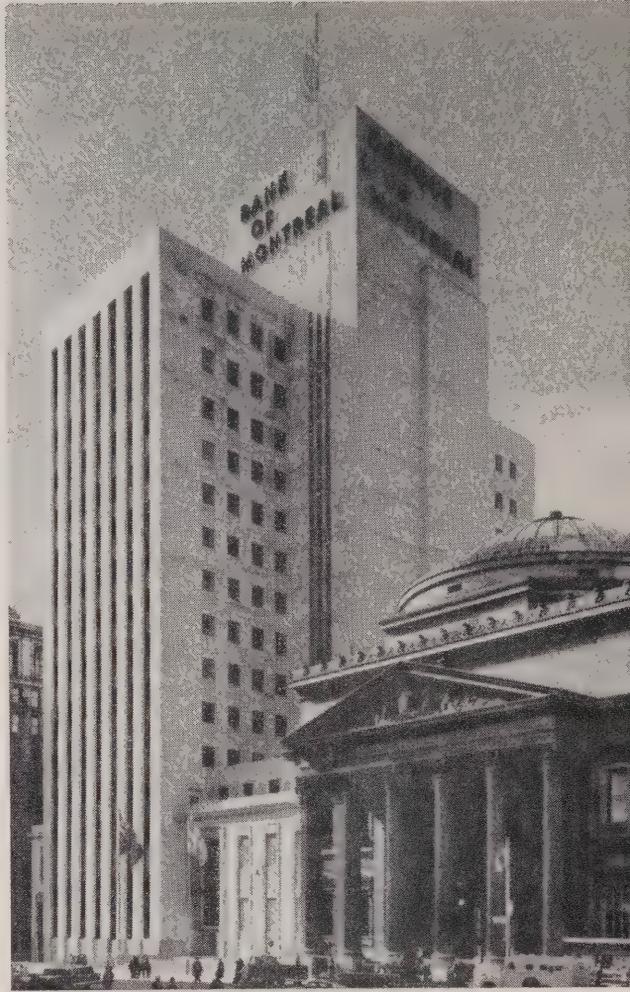


Banking

Canadian money is based on the decimal system, with 100 cents equal to one dollar. Most dollars and their multiples are in the form of paper money, although there are gold coins in denominations of \$20, \$10 and \$5 and there are also silver one-dollar coins. Other coins issued by the Royal Canadian Mint are silver coins in denominations of 50 cents, 25 cents and 10 cents; pure nickel five-cent coins; and bronze (copper, tin and zinc) one-cent coins. A tender of payment of money in coins is a legal tender in the case of gold coins for the payment of any amount; in the case of silver coins, for the payment of an amount up to \$10; nickel coins for payment up to \$5; and bronze coins up to 25 cents.

Commercial banking is conducted by nine privately owned banks which are chartered by Act of Parliament. Of these nine, six are large nation-wide institutions with branches in most provinces; two operate mainly in the province of Quebec and surrounding areas, and one is a subsidiary of a Netherlands bank with three branches.

The authority under which the chartered banks operate is the federal Bank Act, first passed in 1871 and subject to revision every ten years to keep it abreast of changing trends. The Act sets out the requirements for incorporation and for internal regulation of the chartered banks, states what cash reserves they must keep, and sets forth a variety of rules governing the conduct of business with the public. The banks are authorized to accept deposits, make loans covering a wide range of commercial, industrial and agricultural activities, buy and sell securities, deal in foreign exchange and are prohibited from engaging in any trade or business other than banking. Provision is



The new \$10,000,000, 17-storey Bank of Montreal head office stands on Canada's oldest banking site where the bank's first head office was erected in 1819. Adjoining it is the old domed structure of the bank's Montreal branch.



This bank is a trailer, the interior fitted with a safe and living quarters for one or two people. Trailer banks are used extensively at construction sites of a temporary nature and in new developments, pending the construction of permanent facilities.

made for government inspection at least once a year. Within the limitations imposed by the Bank Act, the banks are free to guide their own affairs.

The lending field occupied by the chartered banks is the vital one of providing short-term working capital. Credit is extended to producers, industry, institutions, municipalities, corporations, governments and to tens of thousands of individuals for a multitude of purposes. Canada is the only country in the world which permits banks to make advances against the security of raw materials and to continue the security on the same document through to the finished product and the marketing thereof. The latest analysis of bank loans on Dec. 31, 1960, shows total loans in Canada (excluding residential mortgage loans under the National Housing Act) of \$8,334,988,000.

The head office of a Canadian bank does not transact ordinary day-to-day business with the public; it buys and sells securities as part of the bank's investment portfolio, it advises branch managers on applications of credit when large amounts are involved, and maintains general administrative departments. The branches operate deposit accounts, make loans, pay out cash, deal in foreign exchange, and perform a variety of other services to the public, such as making collections, keeping safety deposit boxes, and so on. In these matters the branch manager has a considerable degree of independent authority, depending on his experience and the importance of his branch.

There has never been any geographical restriction on the operation of the chartered banks. Thus Canada has always had a relatively small number of large banks with significant capital and an extensive network of branches. At the end of 1959 there were 5,052 branch offices of Canadian banks (including



Many businesses find this after-hours deposit facility built into the exterior of their bank a convenient protection.

sub-agencies), an increase of 1,642 in the past 11 years. Foreign offices are maintained by most of the chartered banks in the principal money marts of the world and other offices are established in many foreign cities, mainly in the United States, the United Kingdom, the West Indies and South America. The banks, therefore, are in a particularly favourable position to assist in the trade of the country by providing information and assistance concerning markets, trade regulations, tax situations, foreign exchange, financial arrangements, and so on. There is no doubt that the services of the Canadian banks have contributed materially to the development of this country as a major producing and trading nation.

Statistics of the Chartered Banks of Canada, Nov. 30, 1960

Bank	Branches in Canada and Abroad ¹	Total Assets	Personal Savings Deposits	Total Deposit Liabilities	Loans and Discounts ²	Liabilities to Share- holders
	No.	\$'000	\$'000	\$'000	\$'000	\$'000
Bank of Montreal.....	851	3,404,101	1,599,749	3,128,523	1,557,793	203,751
Bank of Nova Scotia...	602	2,106,821	745,538	1,928,334	1,159,860	115,555
Toronto-Dominion Bank.....	567	1,823,618	835,637	1,712,976	1,001,503	85,053
Provincial Bank of Canada.....	357	368,590	183,242	347,841	184,960	18,138
Canadian Bank of Commerce.....	885	3,094,652	1,356,666	2,861,544	1,461,290	184,991
Royal Bank of Canada. Banque Canadienne Nationale.....	1,018	4,296,822	1,555,974	3,884,134	1,914,314	291,863
Imperial Bank of Canada.....	597	775,742	422,877	727,307	353,886	43,883
Mercantile Bank of Canada.....	342	1,016,713	471,731	932,610	556,660	56,780
Totals.....	3	82,217	1,596	76,500	56,369	3,402
Totals.....	5,222	16,969,276	7,173,010	15,599,769	8,246,635	1,003,416

¹ Includes sub-branches and sub-agencies, insured under the National Housing Act, 1954.

² Includes mortgages and hypothecs

The functions of a central bank in Canada are performed by the Bank of Canada, a government-owned agency established in 1934 for the purpose of regulating credit and currency in the best interests of the economic life of the country. Control of the money supply of the country, of which deposits at the chartered banks are a very large part, rests on the requirement that the chartered banks must keep a minimum amount of cash reserves in relation to their deposit liabilities. These reserves consist of Bank of Canada notes (the ordinary circulating paper money of the country) and of deposits at the Bank of Canada. The central bank may also buy and sell securities on the open market with a view to influencing the chartered banks' cash reserves and to maintaining orderly markets for government securities. Because of the influence of external economic conditions on the state of the Canadian economy, the central bank must give a great deal of consideration, in the formulation of its policies, to Canada's external position as well as to domestic conditions. The Bank is managed by a Board of Directors appointed by the Government.

The Industrial Development Bank, established in 1944, is a subsidiary of the Bank of Canada but operates as a separate entity. Its function is to supplement the activities of the chartered banks and other lending agencies by supplying the medium- and long-term capital needs of small enterprises; it does not engage in the business of deposit banking.

In addition to the chartered banks, there are several other types of savings banks in Canada: trust and loan companies; the Post Office Savings Bank in which deposits are a direct obligation of the Government of Canada; provincial savings banks in Newfoundland, Ontario and Alberta where the



To accommodate its Chinese customers, this bank provides an abacus for simple arithmetic and a Chinese banker who plays the role of "Father Guidance".

depositor becomes a direct creditor of the province; two savings banks in the province of Quebec established under federal legislation; and credit unions which are co-operative savings and loan organizations.

Credit Unions. Credit unions provide an important service to individuals in that they provide an easy method of saving and also make available small loans at low interest. In 1959 there were 4,566 credit unions in Canada—more than half of them in the province of Quebec—with a membership representing 13.3 p.c. of the total population. A marked trend is the growth of occupational credit unions which now represent 34 p.c. of the total; rural credit unions comprise 37 p.c. of the total, a considerable drop from 59 p.c. in 1949. During 1959 membership increased by 7 p.c., savings by 13 p.c., loans by 20 p.c. and total assets by 14 p.c. Average assets per member amounted to \$492.

There are 27 provincial central credit unions in all ten provinces. These act as credit unions for credit unions, in that they accept deposits of surplus funds from credit unions and provide a source of funds for them to borrow when necessary. Some restrict their membership to credit unions; others also admit co-operatives as members. In 1959 the membership in the 27 centrals consisted of 4,414 credit unions and 788 co-operatives, and total assets amounted to \$139,000,000, an increase of 10 p.c. over the previous year.

The Canadian Co-operative Credit Society, organized in 1953, serves as a central savings and credit organization at a national level for the co-operative movement in Canada. It accepts surplus funds on deposit from member associations and borrows money from them and from banks. Funds can be invested in bonds, debentures and other securities approved by the Superintendent of Insurance. In 1959 it made loans totalling \$1,188,000 to the financial centrals. As of December 31, 1959, its total assets amounted to \$604,511.

Growth of Credit Unions—Canada, 1920-59

Year	Provinces	Credit Unions Chartered	Members	Members as a Percentage of Total Population	Assets
	No.	No.	No.	p.c.	\$'000,000
1920 ¹	1	113	31,752	—	6
1925 ¹	1	122	33,279	—	8
1930 ²	2	179	45,767	—	11
1935 ²	3	277	52,045	—	10
1940.....	9	1,167	201,137	1.8	25
1945.....	9	2,219	590,794	4.9	146
1950 ⁴	10	2,965	1,036,175	7.5	312
1955.....	10	4,100	1,731,328	11.1	653
1958 ⁵	10	4,485	2,187,494	12.7	1,009
1959 ⁶	10	4,566	2,347,317	13.3	1,155

¹Quebec only.

²Quebec and Ontario.

³Quebec, Ontario and Nova Scotia.

⁴Newfoundland included for the first time.

⁵Revised for Ontario.

⁶Estimated for Ontario.



The larger of New Brunswick's two central credit unions, this serves a membership of 88 credit unions and, in 1959, had total assets of \$1,928,000 and made loans to the amount of \$491,000.

Insurance

Insurance companies in Canada are supervised by the federal and provincial governments. The federal Department of Insurance is mainly concerned with the solvency of companies; the provincial departments are mainly concerned with statutory conditions of policy forms and licensing of agents, brokers and adjusters. Uniformity of the provincial laws governing insurance is continually under discussion by the Association of Superintendents of Insurance of the Provinces of Canada.

About 90 p.c. of the insurance business is transacted by companies registered with the federal department. These companies make full annual returns on their business and must maintain deposits with the Registrar General or with Canadian trust companies. For British and foreign companies these deposits must be at least equal to their liabilities in Canada. Provincial departments of insurance exercise a similar control over provincial companies which are not registered by the federal department.

At the end of 1959 there were 92 companies (34 Canadian, 15 British and 43 foreign) and 45 fraternal benefit societies registered for life insurance, and 373 companies (103 Canadian, 91 British and 179 foreign) registered for fire and casualty insurance. Provincial companies numbered about 480.

During 1959 life insurance premiums totalled \$753,000,000 and death, disability and maturity claims amounted to \$242,000,000. The excess of premiums over claims and expenses is added to the policyholders' funds which are required to pay future benefits. The investment of these funds has been an important factor in the economy of Canada in helping to finance the building of homes and highways, pipelines and public utilities. At the end of 1959 the funds exceeded \$8,000,000,000. The amount of life insurance in force exceeded \$43,000,000,000.

Fire insurance premiums totalled \$233,000,000 in 1959 and claims amounted to \$119,000,000. Automobile insurance premiums amounted to \$325,000,000 and claims were \$182,000,000. Accident and sickness insurance premiums were \$173,000,000 and claims \$118,000,000. For other classes of insurance covering damage to property, theft, forgery, etc., premiums were \$147,000,000 and claims \$73,000,000.



The \$4,000,000 Sir Humphrey Gilbert Building in St. John's, Newfoundland, houses the provincial offices of the Federal Government.

Government Finance

The division of the responsibility of government in Canada between the federal and provincial authorities, and the delegation by the latter of some of their powers to local or municipal authorities, creates a division of financial responsibility and a need for such apportionment of revenues and borrowing power as will enable responsibilities to be met. As just and satisfactory a settlement of these ever-present problems as can be achieved is essential for Canada, and much of the history of government finance is the story of periodic attempts to adjust to this need.

Although the British North America Act outlined the relationship between federal and provincial jurisdictions, and the provincial legislatures have, in numerous Acts, set forth those between the provincial and local, these Acts serve only as legal guides. In practice, there has been a succession of financial arrangements, the aim of which has been to establish a practical division of revenues and responsibilities. As these have, of necessity, been negotiated compromises between the federal and provincial levels and largely unilateral decisions of the provinces as between province and municipality, they have never satisfied all concerned, and probably never will, due to differing viewpoints and changing requirements.

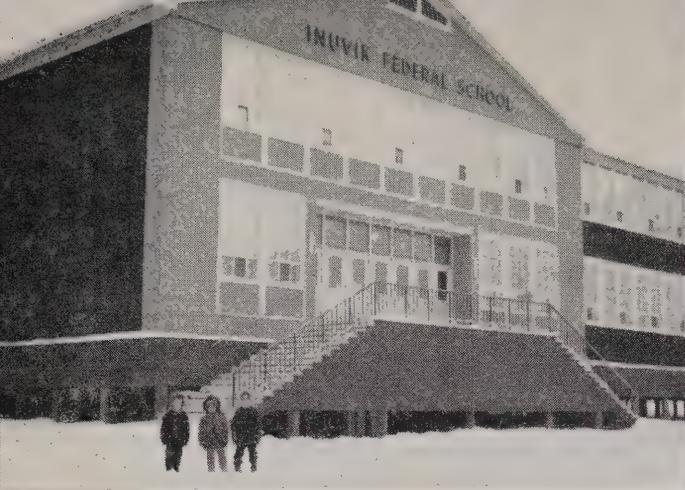
At the time of Confederation it was agreed that the provinces should be paid certain subsidies in lieu of revenues which they surrendered to the central government, and like payments were extended to each new province admitted. In addition, the Federal Government assumed certain provincial debts and undertook to carry out specified works, such as connecting railways. The intention was that such financial arrangements should be final, but claims for re-adjustments came periodically, and many were met in whole or in part.

Until the First World War the federal and provincial governments' revenues were largely obtained from mutually exclusive tax sources, but the exigencies of wartime financing forced the Federal Government to enter tax fields used largely or exclusively, until then, by the provinces—the British North America Act having allowed Parliament the power of “the raising of money by any mode or system of taxation”. From that time the overlap of taxation continued to grow.

The provinces having fallen, during the depression, into even greater financial difficulties than the federal authority, a Royal Commission on Dominion-Provincial Relations was established which, in 1940, published what has become known as the Rowell-Sirois Report. It made recommendations of some import for the re-allocation of tax fields. However, the financing of the Second World War soon pushed other considerations into the background and the Federal Government was forced into additional provincial tax fields, as well as into increasing its use of those which it had previously entered. Agreement was soon sought and obtained by the Federal Government whereby the provinces would forego the levying of personal income and corporation taxes for the duration of the War and accept “rental” payments in lieu thereof. This action sustained provincial revenues and enabled the federal authority to expand its revenues greatly to help finance the War.



The building of roads and streets is a major charge on the budgets of government at all levels.



While certain schools and hospitals are the sole responsibility of the Federal Government, the majority are provided under shared-cost arrangements by various levels of government.



The wartime agreements established a pattern which has since influenced negotiations and settlements. At later conferences the provinces were offered rental payments in lieu of levying their own taxes on corporations and on personal income and successions. Most provinces agreed to the terms. However, Quebec has not signed a rental agreement since 1942. Rather, in 1947 it began levying corporation taxes and succession duties and in 1954 it entered the personal income tax field. Ontario from 1947 to 1952 rented only the personal income tax; corporation taxes were also rented from 1952 to 1957.

The latest federal-provincial tax arrangements to emerge from the conference rooms depart considerably from the 1942, 1947 and 1952 agreements. The Federal-Provincial Tax-Sharing Arrangements Act, 1956 attempted to put every province in a "neutral" position in which the decision to impose its own taxes could be made with no material financial penalty for not signing a rental agreement. All provinces are to obtain revenue yields from "standard rates of taxes" (viz. 10 p.c. of the federal tax on personal income, 9 p.c. of taxable corporate income and 50 p.c. of federal succession duties) equal to the average of the two highest per capita provincial yields. A stabilization clause assures the provinces of as much revenue as they would have received had the former agreements continued. All provinces except Quebec and Ontario agreed to rent the fields of personal and corporation income taxes, other corporation taxes and succession duties to the Federal Government for the 1957 to 1962 period. Ontario agreed to rent only the personal income tax field. Quebec, which did not sign a rental agreement, receives substantial amounts from the Federal Government under the tax equalization clause. The arrangements were later amended to increase the provincial share of the federal tax on personal income from 10 to 13 p.c. for the fiscal years 1958-59 to 1961-62. Provision was also made in 1958 for adjustment grants to the Atlantic Provinces amounting to \$25,000,000 for those four years and divided as follows: to Nova Scotia, New Brunswick and Newfoundland, each \$7,500,000 and to Prince Edward Island, \$2,500,000.

In addition to the above "unconditional" payments which may be spent by the provinces as they see fit, there are many "conditional" grants

from the Government of Canada which are contingent upon the provinces providing certain services at specified standards. The major recent development in this field was the commencement in 1958 of the sharing of costs of hospital insurance programs under the Hospital Insurance and Diagnostic Services Act. General Health Grants, Trans-Canada Highway Grants and various other shared-cost contributions have been paid for many years. However, federal grants-in-aid and shared-cost contributions are growing at a rapid rate; between 1954 and 1958 they tripled.

A similar development has occurred in the provincial-municipal relationship. Provincial grants-in-aid and shared-cost contributions now provide a significant portion of total gross municipal revenue. Some provincial governments are now paying nearly half the cost of operation of local schools by way of substantial grants-in-aid. They also contribute toward local roads and health and welfare services. Some provinces also provide "unconditional" grants to their municipalities to be spent as they see fit.

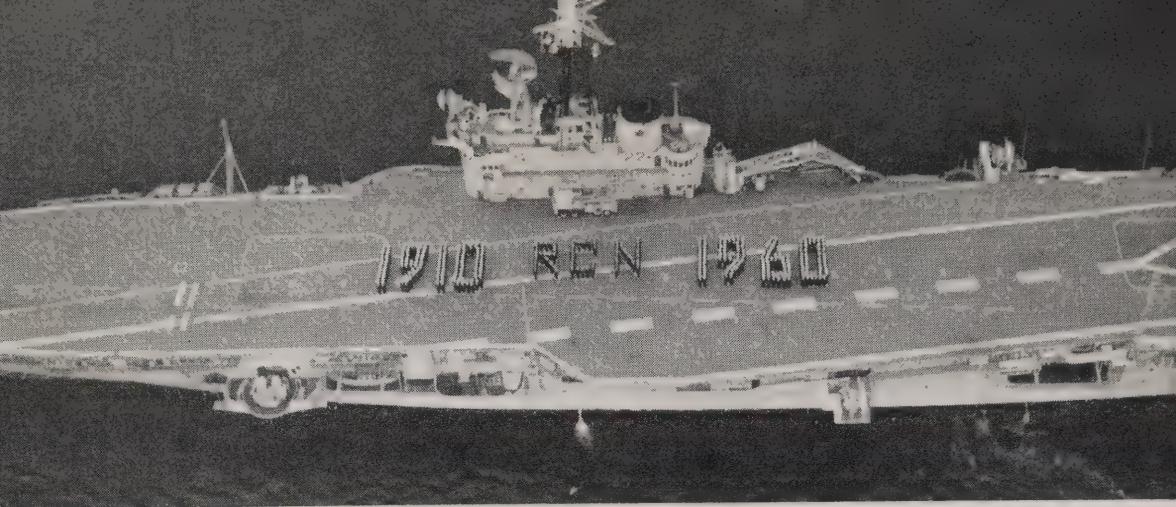
Finances of the Government of Canada

The Government of Canada levies direct and indirect taxes, of which the income tax, individual and corporation, yields the largest return. Excise taxes (including a general sales tax), excise duties and customs duties also produce a very substantial sum. Succession duties and some other taxes yield relatively minor amounts, and certain non-tax revenues accrue each year from financial transactions outside the tax fields. A 3-p.c. sales tax, a 3-p.c. individual income tax with a maximum of \$90, and a 3-p.c. corporation income tax are levied in addition to the regular taxes from these sources as contributions to the Old Age Security Fund, from which pensions are paid to persons over seventy years of age. Transactions of the Old Age Security Fund are included in "net general revenue" and "net general expenditure" but are not included in "budgetary" revenue and expenditure on page 277.

The income tax has been the chief source of revenue of the Federal Government since before World War II. Rates of tax on individual incomes were increased considerably and other forms of income tax were introduced to help finance the War but after hostilities ceased a succession of reductions in rates and increases in exemption allowances relieved some of the burden for the taxpayer. Taxes on corporation incomes were also reduced and the excess profits tax was abolished. However, the expansion of personal income, the growth of the labour force and the growth of industry generally in the postwar years have offset the effect of the reduction in rates and the revenue from income taxes continues to grow each year.

For personal income tax purposes, the 1960 exemptions from income in respect of marital status and dependants are: \$1,000 basic exemption with additional exemptions of \$1,000 for persons taxed as married and \$500 for persons 65 years of age or over; maximum exemptions for dependants of \$250 each are allowed, or \$500 if the dependant is not eligible for family allowance. The rates for 1960 range from 14 p.c. on the first \$1,000 of taxable income to 80 p.c. on income in excess of \$400,000, including the Old Age Security Tax of 3 p.c. up to \$90.

The largest item of expenditure of the Government of Canada is defence services. Other expenditures of major significance are made for health and social welfare, veterans' pensions and other benefits, transportation and



A special salute to the Royal Canadian Navy, which celebrated its 50th anniversary in 1960, is formed on the flight deck of the aircraft carrier *Bonaventure*, largest ship in the RCN, by some 400 members of her ship's company. Defence services constitute the largest charge on the federal budget.

natural resources. Payment of debt charges and tax agreement payments to the provinces are also major items. The outlay for defence, health and welfare, veterans' benefits, debt charges and payments to provinces has, during and since the War, caused much of the great growth in federal expenditure.

Revenue and Expenditure of the Federal Government, Year Ended Mar. 31, 1959

Source	Revenue	Function	Expenditure
	\$'000		\$'000
Taxes—			
Income—			
Corporations.....	1,075,878	Defence services.....	1,594,563
Individuals.....	1,499,849	Mutual aid.....	70,711
Interest, dividends, and other income going abroad.....	61,213	Veterans' pensions and other benefits.....	295,388
General sales.....	868,114	General government.....	261,982
Excise duties and special excise taxes—		Protection of persons and pro- perty.....	72,575
Alcoholic beverages.....	179,264	Transportation and communica- tions.....	329,324
Tobacco.....	288,581	Health.....	129,695
Automobiles.....	59,308	Social welfare.....	1,201,762
Other commodities and ser- vices.....	29,735	Recreational and cultural ser- vices.....	22,110
Customs import duties.....	486,508	Education.....	64,866
Succession duties.....	72,535	Natural resources and primary industries.....	263,309
Other.....	1,213	Trade and industrial develop- ment.....	10,103
Total Taxes.....	4,622,198	National Capital area planning and development.....	9,561
Privileges, licences and permits..	29,449	Debt charges (excluding debt retirement).....	545,721
Sales and services.....	56,910	Payments to government enter- prises.....	169,741
Fines and penalties.....	1,216	Payments to provincial and municipal governments—	
Exchange fund profits.....	18,626	Federal - provincial taxation agreements.....	424,100
Receipts from government enter- prises.....	99,924	Other.....	65,884
Bullion and coinage.....	4,518	Other expenditure—	
Postal service.....	183,380	International co-operation and assistance.....	62,523
Other revenue.....	11,683	Postal service.....	183,536
Non-revenue and surplus receipts.	37,620	Other.....	113,893
		Non-expense and surplus pay- ments.....	291
Total Net General Revenue.	5,065,524	Total Net General Expendi- ture.....	5,891,638

Finances of the Federal Government, Years Ended Mar. 31, 1868-1960

NOTE.—These figures are derived from the Public Accounts of Canada and differ from those in the preceding table. Revenue and expenditure in this table are on a gross basis and net debt here represents the excess of gross debt over net active assets.

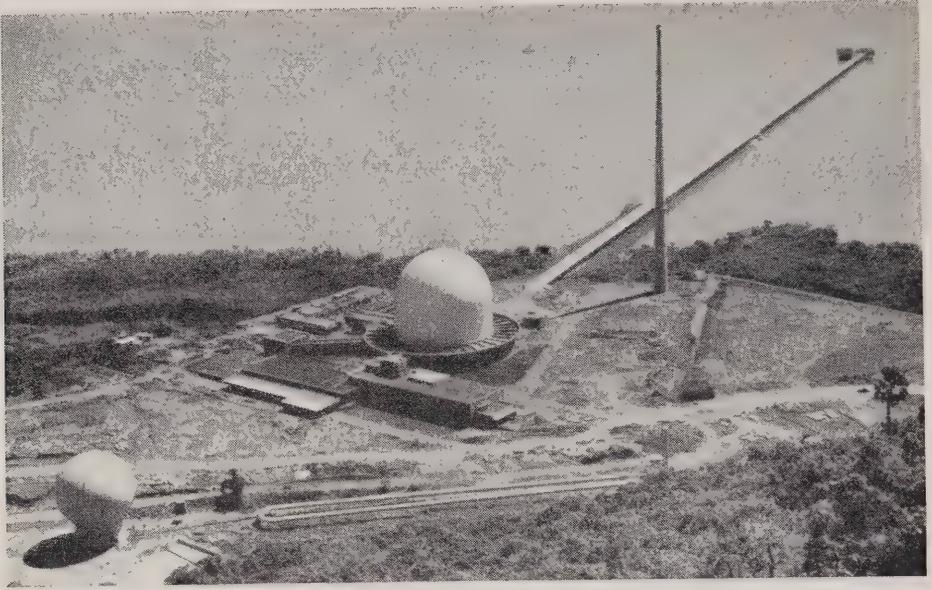
Year	Total Budgetary Revenue	Per Capita Reve- nue ¹	Total Budgetary Expenditure	Per Capita Expendi- ture ¹	Net Debt at End of Year	Net Debt per Capita ²
	\$	\$	\$	\$	\$	\$
1868.....	13,687,928	3.95	13,716,422	3.96	75,757,135	21.58
1871.....	19,375,037	5.34	18,871,812	5.21	77,706,518	21.06
1881.....	29,635,298	6.96	32,579,489	7.66	155,395,780	35.93
1891.....	38,579,311	8.07	38,855,130	8.13	237,809,031	49.21
1901.....	52,516,333	9.91	55,502,530	10.47	268,480,004	49.99
1911.....	117,884,328	16.87	121,657,834	17.40	340,042,052	47.18
1921.....	436,888,930	51.06	528,899,290	61.82	2,340,878,984	266.37
1931.....	357,720,435	35.04	441,568,413	43.26	2,261,611,937	217.97
1941.....	872,169,645	76.63	1,249,601,446	109.80	3,648,691,449	317.08
1951.....	3,112,535,948	226.99	2,901,241,698	211.58	11,433,314,948	816.14
1952.....	3,980,908,652	284.17	3,732,875,250	266.46	11,185,281,546	773.59
1953.....	4,360,822,789	301.60	4,337,275,512	299.97	11,161,734,269	751.88
1954.....	4,396,319,583	296.15	4,350,522,378	293.06	11,115,937,064	727.15
1955.....	4,123,513,300	269.74	4,275,362,888	279.67	11,263,080,154	717.49
1956.....	4,400,046,639	280.29	4,433,127,636	282.40	11,280,368,964	701.47
1957.....	5,106,540,880	317.55	4,849,035,298	301.54	11,007,651,158	663.55
1958.....	5,048,788,279	304.35	5,087,411,011	306.67	11,046,273,890	647.95
1959.....	4,754,722,689	278.90	5,364,039,533	314.64	11,678,389,860	669.56
1960.....	5,289,751,209	303.28	5,702,861,053	326.96	12,089,194,003	678.63

¹ Based on estimated population as at June 1 of the immediately preceding year.

² Based on estimated population as at June 1 of same year.



The \$18,000,000 Halifax International Airport, opened in 1960.



The Canada-India Reactor near Bombay, India was built as a joint project of India and Canada. In addition to providing the reactor, Canada gave extensive technical assistance, including the training of operating and maintenance staff.

Revenue and expenditure of the Government of Canada reached an all-time high in the year ended Mar. 31, 1960. The net debt reached a peak of \$13,421,000,000 at Mar. 31, 1946.

Inflation in the general price level and population growth through the years have reduced the significance of the size of the Government of Canada debt, and the great expansion of the Canadian economy allows the country to support the present debt on a sound financial basis. On Mar. 31, 1939, the net debt amounted to 60.2 p.c. of the gross national product; by 1946 this had risen to 113.3 p.c. but by Mar. 31, 1960, the net debt amounted to approximately 35 p.c. of the gross national product.

The outstanding unmatured funded debt (including treasury bills) of the Government of Canada at Mar. 31, 1960, amounted to over \$15,890,000,000. The portion of the unmatured funded debt payable in Canada was 98.8 p.c., the portion payable in London amounted to 0.3 p.c. and in New York 0.9 p.c.

Provincial Finance

Net general revenue and net general expenditure of provincial governments amounted to approximately \$2,200,000,000 in 1958-59, an increase of 11 p.c. over the previous year. More than 46 p.c. of total net general revenue came from tax receipts in 1958-59; privileges, licences and permits was the next largest category with over 21 p.c., followed by approximately 18 p.c. from federal payments under the federal-provincial tax-sharing arrangements. The bulk of net general expenditure in this fiscal year was spent on transportation and communications (about 28 p.c.), education (over 23 p.c.) and health (nearly 15 p.c.). Under the Unemployment Assistance Act, all provinces have

entered into agreements whereby the Federal Government contributes 50 p.c. of all unemployment assistance given by a province or municipality. The federal government also announced its winter works assistance program covering the period from December 1, 1958, to April 30, 1959, under which it would enter into agreements with the provinces to contribute amounts not exceeding 50 p.c. of the cost of labour of municipal winter works projects; most provinces took advantage of this proposal in 1958-59.

Net General Revenue and Expenditure of Provincial and Territorial Governments, Year Ended Mar. 31, 1959

Province	Revenue	Expenditure	Province or Territory	Revenue	Expenditure
	\$'000	\$'000		\$'000	\$'000
Nfld	62,381	61,530	Sask.....	141,409	137,513
P.E.I.....	12,568	14,388	Alta.....	236,370	213,030
N.S.....	75,752	86,336	B.C.....	295,722	266,584
N.B.....	71,007	70,928	Yukon.....	1,885	2,148
Que.....	556,723	533,026	N.W.T.....	1,412	1,934
Ont.....	647,067	741,936			
Man.....	76,573	97,821	Totals.....	2,178,869	2,229,174

Analysis of Net General Revenue and Expenditure of Provincial and Territorial Governments, Year Ended Mar. 31, 1959

Source	Revenue	Function	Expenditure
	\$'000		\$'000
Taxes.....	1,010,159	General government.....	95,444
Federal - provincial tax - sharing arrangements.....	399,100	Protection of persons and property.....	116,336
Privileges, Licences and Permits—		Transportation and communications.....	622,061
Motor vehicles.....	146,408	Health.....	330,237
Natural resources.....	258,770	Social welfare.....	191,544
Other.....	61,309	Recreation and cultural services	20,266
Sales and services.....	33,303	Education.....	522,726
Fines and penalties.....	7,395	Natural resources and primary industries.....	158,226
Government of Canada—		Trade and industrial development.....	11,823
Share of income tax on power utilities.....	8,483	Local government planning and development.....	5,022
Subsidies.....	60,197	Debt charges (exclusive of debt retirement).....	55,351
Government enterprises.....	181,086	Contributions to local governments.....	61,470
Other revenue.....	3,573	Contributions to government enterprises.....	4,527
Non-revenue and surplus receipts.	9,086	Other expenditures.....	25,868
Total.....	2,178,869	Non-expense and surplus payments.....	8,253
SUMMARY OF LIQUOR CONTROL REVENUE		Total, exclusive of Debt Retirement.....	2,229,174
(included above)—			
Sales tax.....	2,368		
Permits.....	38,412		
Fines and confiscations.....	1,093		
Profits.....	175,338		
TOTAL.....	217,211		

Direct and indirect debt of provincial and territorial governments, less sinking funds, amounted to \$5,859,000,000 at March 31, 1959, an increase of



RCAF aircraft flying supplies to northern posts airlifted a total of 1,100,000 lbs. of air freight during 1960. The material moved included fresh and frozen rations, meteorological equipment, mobile equipment spare parts, fuel oil, building materials, general cargo and mail.



Both federal and provincial funds are used for research. Here experiments are being carried out on the growing corn in the far north, under plastic shelter with heating cables in the ground.

\$650,000,000 over the previous year. Direct debt at March 31, 1959, was \$3,178,000,000 or \$182 per capita and indirect (guaranteed) debt was \$2,681,000,000 or \$154 per capita.

Municipal Finance

Incorporated municipalities include within their boundaries only a small portion of the area of Canada but they serve most of the population. Outside lie a few school districts and in parts of municipally unincorporated territory some local services are provided by the provincial government concerned. A great part of the area of Canada has not sufficient density of population to warrant even these limited activities. In most provinces, the municipalities levy the local taxation for school authorities but exercise little or no control over school administration or finance. In much of Quebec and Prince Edward Island and in limited areas of some other provinces, school authorities levy



The laying of sewers is an important concomitant of urban expansion. In Ontario, a provincial commission plans, finances, builds and operates sewage and water works for requesting communities.

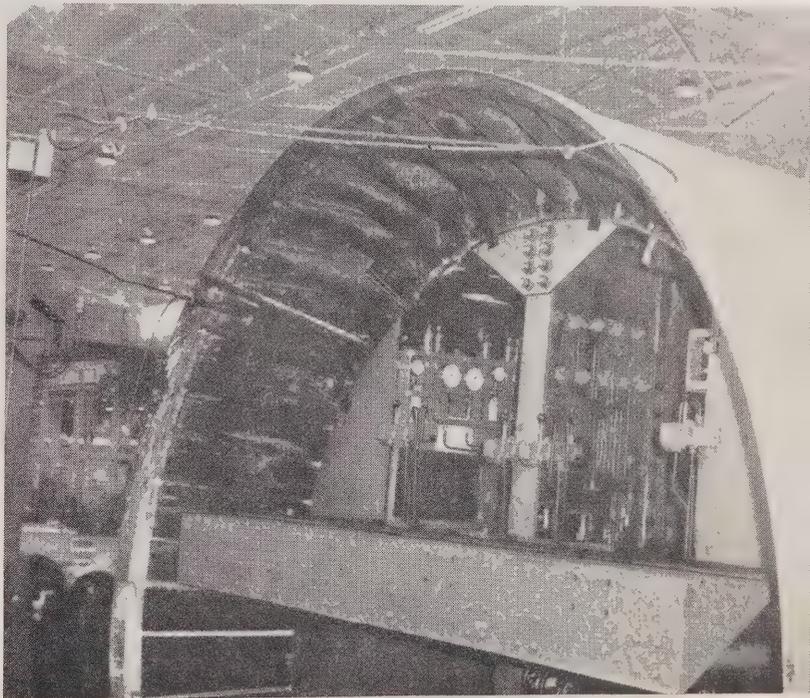
and collect local taxes. In Newfoundland (except for Local School Tax Area Authorities which levy and collect school taxes in two municipalities) school boards receive most of their funds from the provincial government.

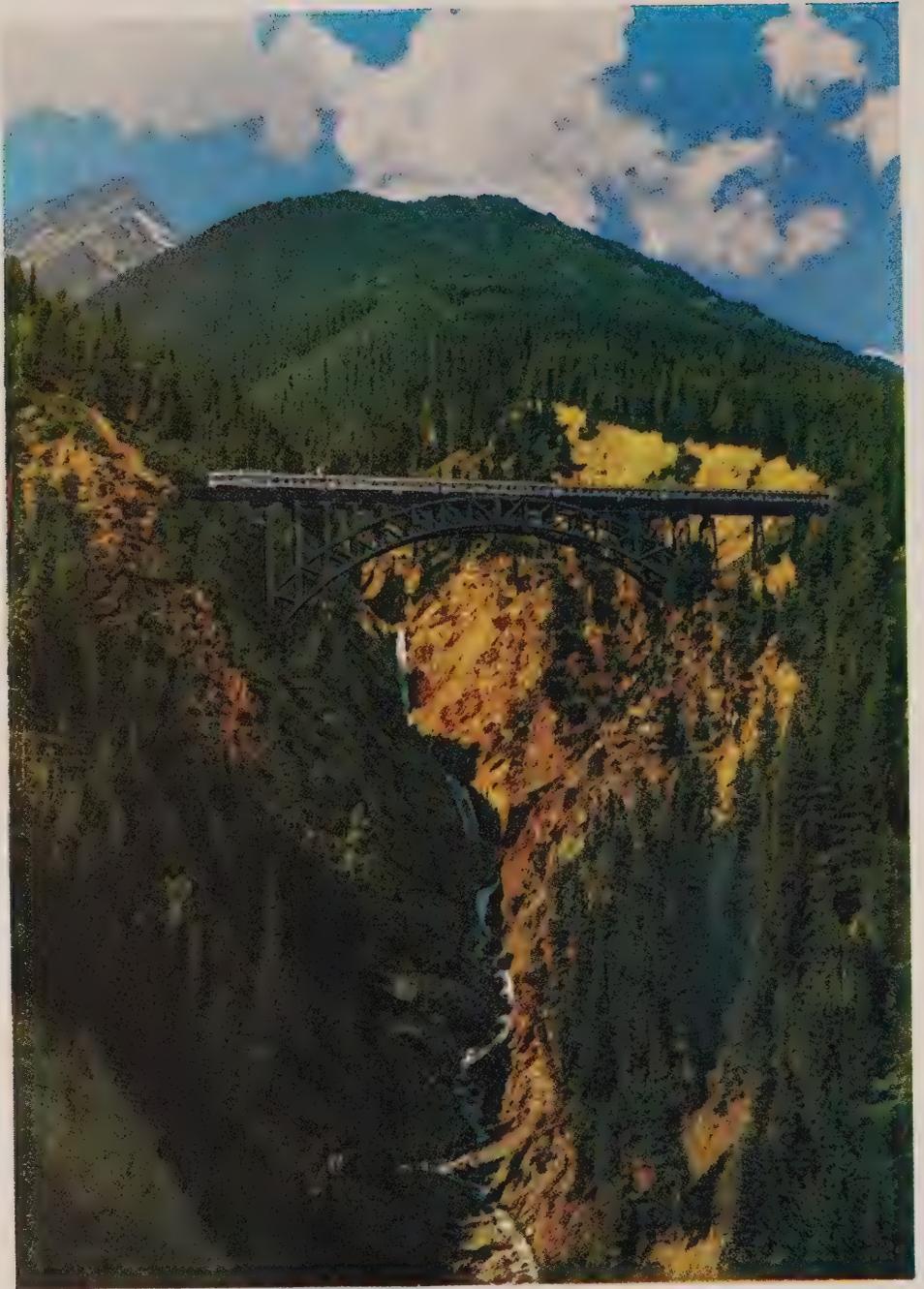
The largest source of revenue for municipalities and other local authorities, yielding over two-thirds of the total, is the real property tax. Also varying in importance from province to province are business and other taxes, licences and permits, public utility contributions, and provincial grants and subsidies. Of municipal expenditure from current revenue almost a third goes to support local schools. Other major expenditures are for public welfare, roads and streets, protection of persons and property, and debt charges. Increasingly substantial sums of borrowed capital have been expended in recent years in an attempt to catch up and keep up with the streets, sanitation systems, water systems and other municipal services required by urban municipalities whose population and development have increased at a rate far beyond that of the remainder of the country.

Provincial governments supervise the issuance of municipal debt and limit it by legislation or by regulatory formulae. In some instances, provinces are now aiding municipalities and schools in their capital projects by various methods, such as by outright grants, loans, sharing of debt charges and assumption of debt.

For the calendar year 1958 gross current revenue and expenditure of all municipal governments in Canada approximated \$1,550,000,000. As at December 31, 1958, total direct debt of local government bodies and of activities which are carried on under their authority or by bodies which are co-existent with the municipalities, amounted to approximately \$4,000,000,000. There is very little indirect debt at the municipal level.

One of the six massive shields driving tunnels for Toronto's second subway. Miners, protected by the shield's hood, stand on the platform and excavate with pneumatic tools. The front of the shield has a cutting edge that cuts into the soil as the shield is propelled forward by its hydraulic jacks.





Transportation

THE lifeblood of any economy is totally dependent on that economy's system of veins and arteries—those complex routes, whether by water or on, above or beneath the surface of the land, by which goods and people are moved in safety and with despatch. To feed the mills and factories and stores of Canada and to carry on trade with many other countries, every facility of Canadian transportation has been exploited with imagination and an immense amount of work, for the problems of supplying a transcontinental state 4,000 miles long and broken by mountain ranges and great water masses are not easily solved.

To ensure that the agencies of transportation operate with maximum efficiency, dependability and economy, the Federal Government exercises a considerable degree of control. Three bodies in particular—the Board of Transport Commissioners for Canada, the Air Transport Board and the Canadian Maritime Commission—exercise regulatory functions over all forms of public transportation, and also telephones and telegraphs.

The Board of Transport Commissioners has jurisdiction, under more than a score of Acts of Parliament, including the Railway Act, the Transport Act and the Pipe Lines Act, over transportation by railway and by inland water; over communication by telephone and telegraph; and over the transmission of oil and natural gas by interprovincial or international pipelines.

Under the Railway Act its jurisdiction is, stated generally, in respect of construction, maintenance and operation of railways that are subject to the legislative authority of the Parliament of Canada, including matters of engineering, location of lines, crossings and crossing protection, safety of train operation, operating rules, investigation of accidents, accommodation for traffic and facilities for service, abandonment of operation, freight and passenger rates, and uniformity of railway accounting. The Board also has certain jurisdiction over telephones and telegraphs, including regulation of the telephone tolls of four telephone companies and over express traffic and tolls for the use of international bridges and tunnels.

Regulation of railway freight and passenger rates is one of the Board's principal tasks. Since the end of World War II there has been a succession of applications for authority to make general freight rate increases and general telephone rate increases.

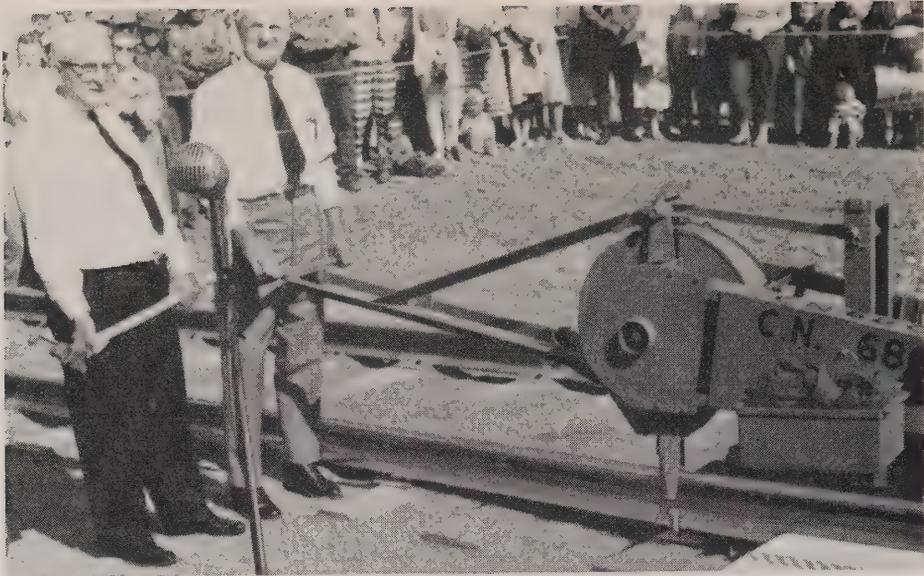
The Air Transport Board issues regulations dealing with the classification of air carriers and commercial air services, applications for licences to operate commercial air services, accounts, records and reports, ownership, transfers, consolidations, mergers and leases of commercial air services, traffic tolls and tariffs, and other related matters.

The Canadian Maritime Commission was constituted for the purpose of examining into, keeping records of, and advising the Minister of Transport on matters pertaining to Canadian shipping and shipbuilding services.

Railways

Two great transcontinental railway systems operate almost all of the railway facilities in Canada—the Canadian National Railway System, a government-owned body, and the Canadian Pacific Railway Company, a joint stock corporation. These systems, though highly competitive, still co-operate in many fields where duplication of service is not profitable. Both systems, in addition to their wide-flung railway and express operations and their extensive maintenance services, conduct other transport facilities—fleets of inland and coastal vessels and ferries, ocean-going steamships, nation-wide telegraph services providing communication between all principal points of Canada with connections to all parts of the world, highway transport services, year-round and resort hotels, and extensive passenger and freight air services over domestic and international routes.

An increase in freight rates during 1959 was the major factor in advancing revenue for Canadian operations of the two lines from \$1,030,255,106 in



The latest in automatic equipment is used to drive the last spike on the new 52-mile Optic-Chisel Lake line in northern Manitoba in September, 1960.



The "rail-aid" moves along railway track under its own power, rolls off its own rail car which it then removes from the track, and goes about its business of cleaning ditches, widening banks, moving ballast, loading or unloading cars, assisting in repair work on trestles or even pile-driving.

Introduction of Canada's first mobile diesel refueler in the summer of 1960 cut servicing time of a yard engine from $1\frac{1}{2}$ hours to 20 minutes. The refueler supplies diesel fuel oil, sand, cooling water and lubricating oil.



1958 to \$1,066,994,641 in 1959. During the same period, railway expenses also increased, from \$1,009,412,521 to \$1,029,587,310, largely due to increased labour costs. Revenue per passenger mile decreased by an average of 11 cents, while revenue per ton-mile of freight increased by an average of 9 cents.

During 1960 both railways continued to improve their equipment and services. A landmark in railroading history was achieved when both companies completed the switchover from steam to diesel locomotives for freight, passenger and yard service.

Both lines expanded and extended the "piggy-back" service, by which flatcars carry loaded trailers from one point to another, where they are once more hooked up to motors and return to the highways. Loadings of highway trailers increased 75 p.c. in 1959 over 1958 and averaged about 3,000 a week at the end of the year.

To tempt the dwindling passenger trade, both railways initiated various plans. Included in these are the "Go Now—Pay Later" time-payment plans; credit cards offering credit for railway or airline accommodation, telegraph, express, hotel and car rental services; and plans for a reduction in rates for groups travelling together and all-inclusive rates covering transportation, berths, meals and tips. "Railiners"—self-propelled diesel cars—are used effectively on short runs. Cafeteria service on trains has proved popular and is being extended.

"Containerization" is a recent innovation on the White Pass & Yukon Railway running from Whitehorse, Yukon, to Skagway, Alaska. Containers are packed with freight and locked, which prevents breakage and pilfering. They are loaded and unloaded by forklift and travel on flatcars, eliminating the need for boxcars. Here they are shown stacked, waiting for truck pick-up.



Operations of hotels owned by the two railways showed an improvement over 1958. The Queen Elizabeth Hotel in Montreal operated for the full year (in 1958 it was in operation for only eight months), and the new addition to the Royal York in Toronto brought it back to its position as the largest hotel in the Commonwealth, with 1,600 rooms. A 160-room addition to the Nova Scotian in Halifax will be completed in 1961.

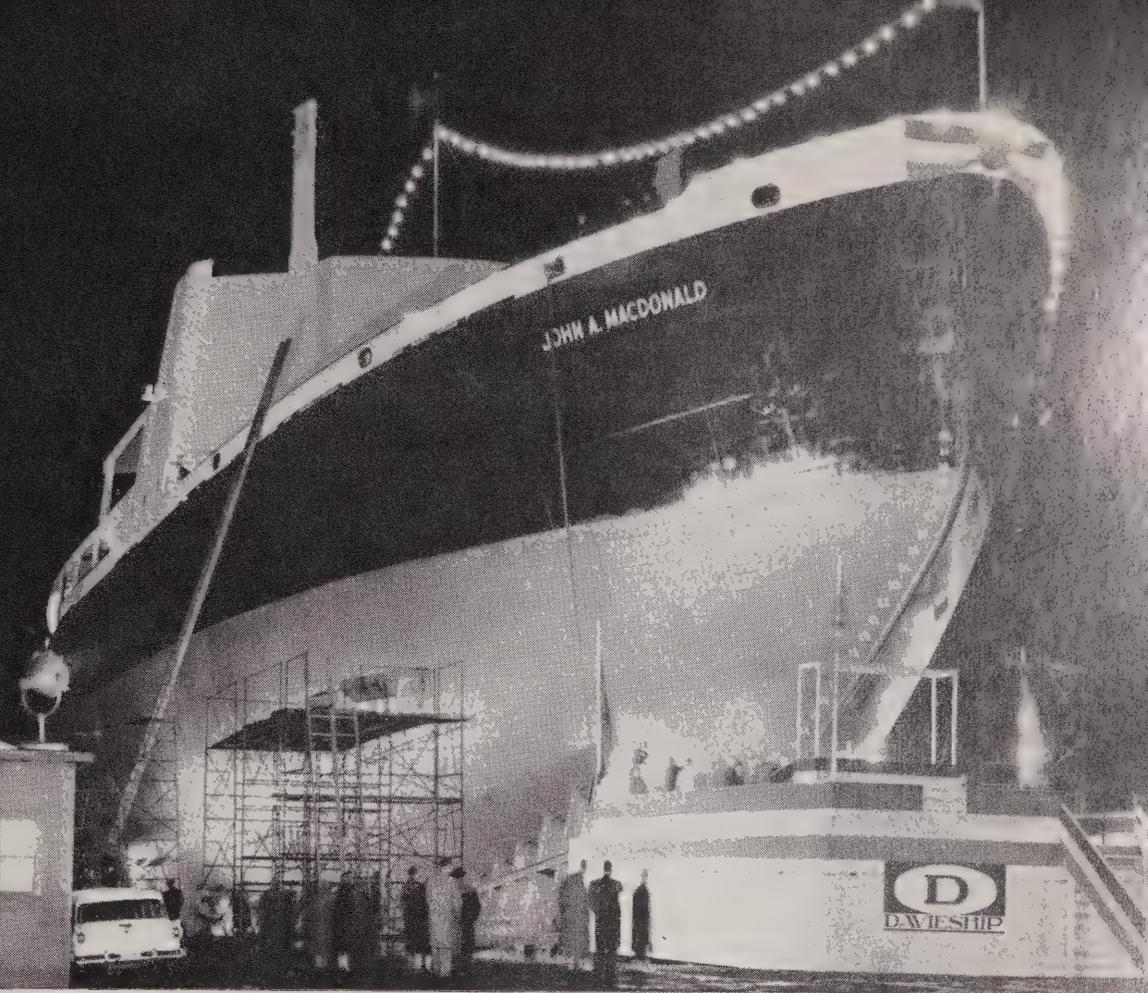
Telex, the service which enables rapid printed communication between subscribers and which is operated jointly by the two railways, was extended. By the end of 1960, the number of Telex subscribers had grown to more than 3,000.

Shipping

Bounded on three sides by salt water and, along nearly half the fourth, by a deep-water inland lake and river system, Canada has always had a vital interest in shipping. Apart from foreign shipping, there is a tremendous fleet of smaller ships plying the coastal trade. In the interior, there are lakes and rivers which provide the only form of ground transportation to many remote, but important, areas. These bodies of water are frozen for many months of the year; water transportation in these areas, then, while statistically unimportant, is invested with an urgency less apparent where the water is open all year.

An aerial view of the new CNR automatic hump yard in Montreal. When opened in 1961, it will be the largest yard in North America, having the capacity to receive 100 trains and transfers daily, or a total of up to 7,000 cars. It will process them through the yard and have them ready for movement within four hours after arrival. An appreciation of the yard's huge size can be gained by a comparison with the sizeable CPR yard on the left.





The world's third strongest 15,000-hp. ice-breaker, the *John A. Macdonald*, completed its maiden northern supply tour in 1960. It is scheduled to make a crossing of the Northwest Passage in 1961. This ship has a radius of action of 20,000 miles without refuelling and is fitted with triple propellers, three helicopters for reconnaissance, an electric fire detection system, an electrically heated crowsnest, and a hull capable of withstanding heavy ice pressure.

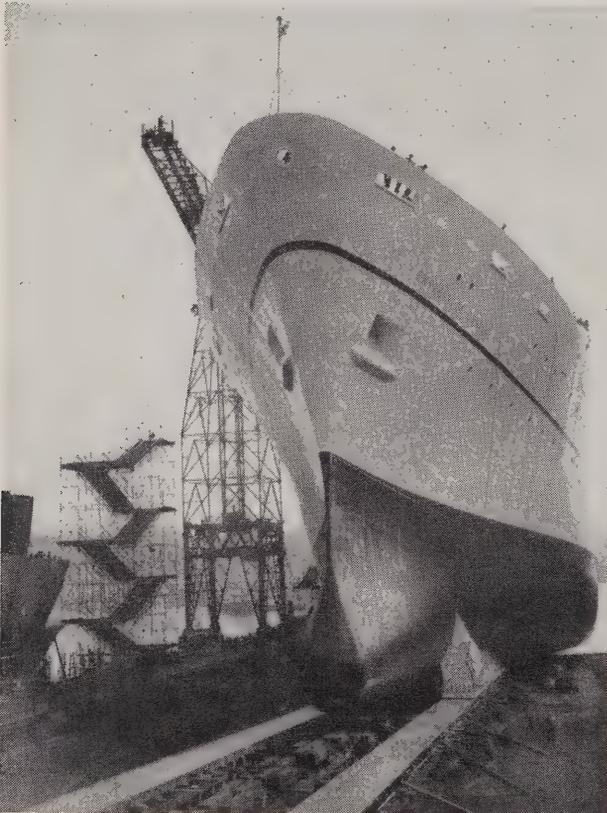
Except for the coastal trade, the waterways of Canada—the rivers, lakes and canals—are open on equal terms to the shipping of all nations, although most of the inland trade is carried in ships of Canadian registry. In 1959, 143,953 vessels, engaged in foreign or coastal trade, arrived at Canadian ports, compared with 130,944 in 1958 and 139,431 in 1957. The total tonnage of all cargoes loaded and unloaded in foreign trade during 1959 at Canadian ports amounted to 85,009,691, compared with 71,432,576 in 1958. Of this tonnage, 24,423,914 or 29 p.c. was carried in vessels of Canadian registry.

Of the total waterborne foreign trade, 56.4 p.c. or 48,004,037 tons was with the United States and, of this traffic, Canadian vessels carried 50.3 p.c. In trade with other countries, however, Canadian vessels carried only 278,437 tons of a total of 36,005,654 tons. Most of the remainder was carried by vessels of the United States, the United Kingdom, Norway, Liberia, Panama, Germany, Sweden, Italy, Japan and the Netherlands.

Commodities exported from Canadian ports by vessel in 1959 amounted to 50,455,303 short tons, an increase of 25 p.c. over the 1958 total. Export shipments from the Atlantic and lower St. Lawrence River ports rose 26 p.c. to 31,242,709 tons; from the Great Lakes and upper St. Lawrence River ports shipments were up 54 p.c. to 8,662,554 tons; while shipments from Pacific coast ports increased by 6 p.c. to 10,550,040 tons. The major commodities, in tons, exported by ship in 1959 included: iron ore, 20,350,218; wheat, 7,431,484; gypsum, 4,674,084; newsprint, 2,500,438; and lumber, 2,146,330.

Imports unloaded at Canadian ports were also higher than in 1958, increasing by 11 p.c. to 34,554,388 tons from 31,133,694 tons. Shipments of petroleum oils were up by more than one million tons, to 4,274,587 tons from 3,067,149, bituminous coal increased to 11,037,707 from 10,545,955 and crude petroleum to 4,125,395 tons from 3,539,416. Other commodities showing increases were limestone, sand, gravel and stone, and scrap iron. Among the commodities showing decreases were iron ore, down to 3,198,070 tons from 3,552,989, gasoline to 547,642 tons from 637,550 and sulphur to 323,160 tons from 403,889.

Canadian aids to navigation include adequate marking of dangerous areas by lighthouses and other marine signals, an efficient pilotage service, and radio-signal and direction-finding stations. Comprehensive federal legislation and regulations ensure a high standard of safety for navigation in Canadian waters.



Canadian Pacific Steamships' new flagship, the *Empress of Canada*, minutes before she was launched in May, 1960. Put into operation on the Atlantic run in April, 1961, this 27,500-ton ship is featured by a bulbus bow designed to reduce pitching and stabilizers to cut roll from 25° to 3° .



Freight is carried ashore at Resolute Bay on Cornwallis Island in the Arctic by Department of Transport barges.

Canals

The major canals in Canada are those of the St. Lawrence-Great Lakes waterway—the three new canals of the St. Lawrence Seaway, with their seven locks, providing navigation for vessels of 25-foot draught from Montreal to Lake Ontario; the Welland Ship Canal by-passing the Niagara River between Lake Ontario and Lake Erie with its eight locks; and the Sault Ste. Marie Canal and lock between Lake Huron and Lake Superior. These 16 locks overcome a drop of 580 feet from the head of the lakes to Montreal. The St. Lawrence Seaway was opened to navigation on April 25, 1959, and a new phase in the history of this waterway began. From Montreal to Lake Ontario the former bottleneck of narrow shallow canals and of slow passage through 22 locks has been overcome, giving faster and safer movement for larger vessels. The new locks and linking channels now accommodate all but the largest ocean-going vessels and the upper St. Lawrence and Great Lakes are open to 80 p.c. of the world's saltwater fleet. Only time will establish the value of this project, but it is certain to bring about a major change in the pattern of trade and the destiny of the Great Lakes area.

Subsidiary Canadian canals or branches include the St. Peters Canal between Bras d'Or Lakes and the Atlantic Ocean in Nova Scotia; the St. Ours and Chambly Canals on the Richelieu River, Quebec; the Ste. Anne, Carillon and Grenville Canals on the Ottawa River; the Rideau Canal between the Ottawa River and Lake Ontario; and the Trent and Murray Canals between Lake Ontario and Georgian Bay in Ontario. The commercial value of these

canals is not great but they are maintained to control water levels and permit the passage of small vessels and pleasure craft. The Canso Canal, completed in 1957, permits shipping to pass through the causeway connecting Cape Breton Island with the Nova Scotia mainland. During 1959, 51,076,132 tons of freight passed through all Canadian canals in 30,559 vessels.

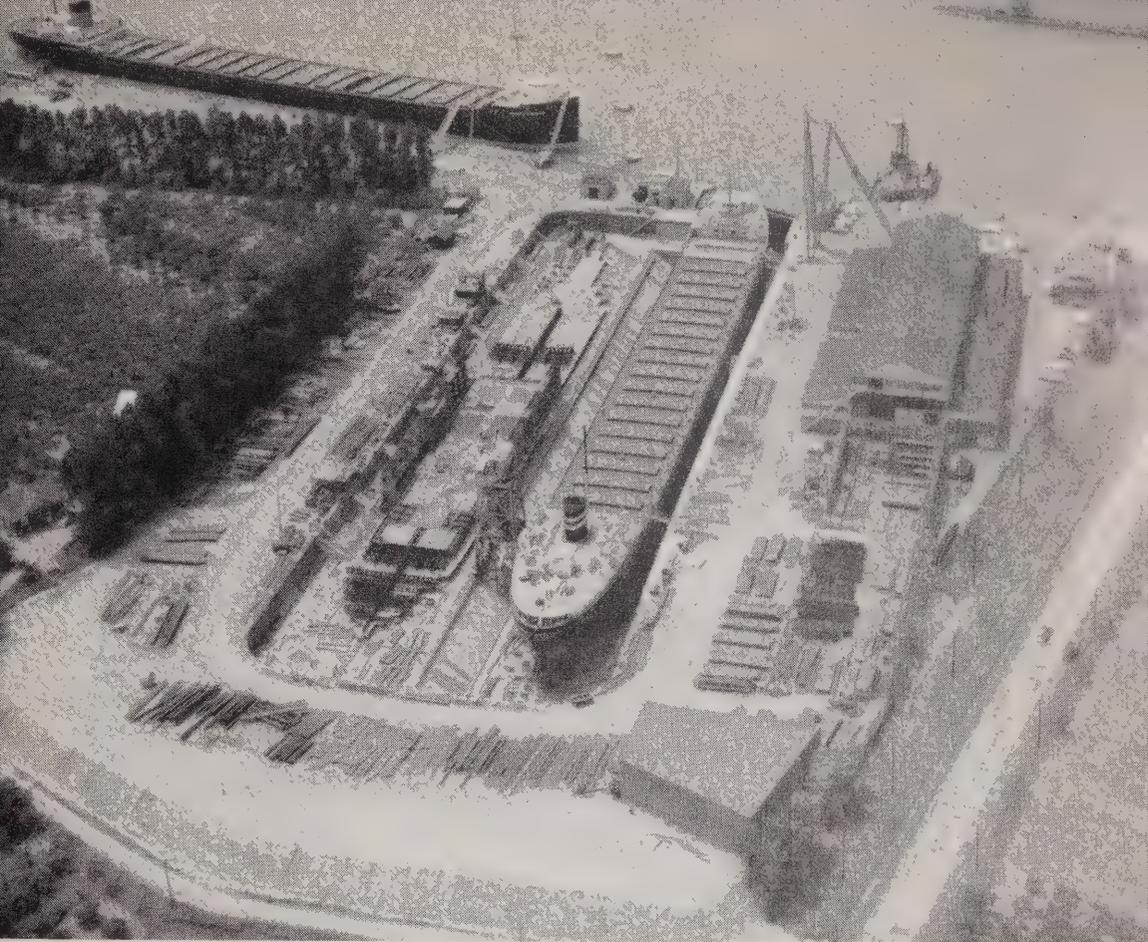
Harbours

A considerable part of the goods carried in Canada, both in domestic and international trade, use water facilities for some portion of their journey. The interchange of movement from land to water routes and vice versa is handled at many ports on the sea coasts and along the St. Lawrence-Great Lakes waterway all of which are well equipped with the necessary docks and wharves, warehouses, equipment for the handling of bulk freight, harbour railways, grain elevators, coal bunkers, oil storage tanks and dry docks.

Eight of the principal harbours are administered by the National Harbours Board, a Crown corporation responsible to Parliament for their efficient operation. Seven other harbours are administered by commissions that include municipal as well as federal appointees and, in addition, there are about 300

The seaport of Churchill, Manitoba, on the west coast of Hudson Bay. Founded as a trading post in 1685, Churchill was not reached by railway until 1931. Today it serves as an administrative centre for the district and as headquarters for defence forces based in the northern areas.





The Port Weller shipyard on the Welland Canal at St. Catharines, Ontario. Situated in one of North America's oldest ship-building centres, it has a 730-foot building dock, a 750-foot graving dock for repairs and a 100-foot sheerleg crane, the largest ever built in Canada, capable of lifting 125 tons.

public harbours, all of which are under the supervision of the Department of Transport. The harbours administered by the National Harbours Board are: Halifax and Saint John on the Atlantic seaboard; Chicoutimi on the Saguenay River, and Quebec, Three Rivers and Montreal on the St. Lawrence River in Quebec; Churchill on Hudson Bay; and Vancouver on the Pacific coast. Most of these ports also have dock and handling facilities owned by private companies.

A large construction program is under way both by the National Harbours Board and by other administering agencies to keep Canadian harbour facilities in line with requirements. In particular, the ports on the St. Lawrence River and Great Lakes are preparing for an influx of larger shipping as a result of the completion of the Seaway project. New wharves and piers, grain elevators and warehousing and freight-handling equipment are being constructed or installed.

The freight movement through a large port includes that loaded and unloaded from sea-going vessels, the cargo handled by coastal vessels which is as large or larger, in-transit movement, and the movement from one point to another within the harbour. Figures for the ports reporting the highest tonnages in foreign and coastwise trade in 1959 are given in the following table.

Foreign and Coastwise Trade through Ports Handling over 2,500,000 Tons in 1959

Port	Foreign		Coastwise		Total Freight Handled tons
	Loaded	Unloaded	Loaded	Unloaded	
	tons	tons	tons	tons	
Montreal.....	3,601,922	5,689,607	4,003,165	4,646,870	17,941,564
Sept Îles.....	12,371,539	141,291	2,256,430	260,461	15,029,721
Vancouver.....	5,600,821	965,634	2,315,868	2,948,105	11,830,428
Port Arthur.....	3,260,969	144,912	5,398,739	187,097	8,991,717
Hamilton.....	65,297	5,393,479	379,537	1,647,725	7,486,038
Halifax.....	2,506,096	3,083,569	1,581,791	225,700	7,397,156
Toronto.....	257,522	2,170,907	550,996	1,789,683	4,769,108
Sault Ste. Marie....	377,485	3,349,093	147,612	702,626	4,576,816
Quebec.....	852,516	748,597	190,989	2,477,173	4,269,275
Fort William.....	589,088	162,150	2,509,673	439,321	3,700,232
Port Colborne.....	717,281	402,321	806,190	1,409,626	3,335,418
Sydney.....	16,123	208,606	1,796,484	1,203,478	3,224,691
Sarnia.....	79,725	648,577	1,720,324	582,748	3,031,374
Port Alfred.....	468,086	1,979,388	161,405	334,898	2,943,777
Sorel.....	1,042,501	350,472	152,487	1,391,588	2,937,048
New Westminster....	907,618	192,598	1,073,664	617,703	2,791,583
Three Rivers.....	686,341	379,262	54,030	1,651,856	2,771,489
Saint John.....	1,048,061	829,157	109,994	440,000	2,427,212
Bell Island.....	1,894,015	—	467,482	17,419	2,378,916
Contrecoeur.....	1,038,298	545,935	40,374	617,738	2,242,345

Certain of these ports, such as Sept Îles and Port Alfred, serve large industrial establishments rather than great aggregations of population and their cargoes are therefore limited mainly to the movement of such heavy bulk raw materials as iron ore, pulpwood or, as for Port Alfred, bauxite.



The ship that never sails is the lightship which guards the rocky Lurcher Shoals 24 miles off the coast of Nova Scotia. Crews of 12 keep vigil month and month about. Several crew members have served more than 20 years on the Lurcher Lightship.



Seen in the centre of the approach lights in this picture of an aircraft making a landing are the units of a new electronic landing aid which guides pilots to the runway during periods of poor visibility. It is the electronic flash approach system, a synchronized line of 50 flashing lights that produce a ball of fire along the line of approach. The plane is a Canadian-built Tracker anti-submarine aircraft, of which Canada is transferring 17 to the Royal Netherlands Navy under the 1960-61 NATO Mutual Aid Program.

Airlines

Because of the continued expansion in both freight and passenger air services and the desire to keep Canadian aviation abreast of jet age requirements, the needs for new or extended ground facilities were under constant appraisal. Substantial progress was made by the federal Department of Transport during 1960 in planning, designing and constructing new air terminal buildings, airports, runways, improved navigation aids, air traffic control facilities and meteorological services. A major contract was completed at Frobisher in the construction of living quarters, a four-room school, five warehouses and an administration building. New terminal buildings were opened at Ottawa's Uplands Airport, at the Montreal International Airport at Dorval, Que. and at Regina, Sask. An entirely new airport and terminal was opened at Halifax, N.S. and a new airport went into use at Edmonton, Alta. Plans progressed for new terminal facilities at North Bay and Sault Ste. Marie, Ont.; Port Hardy, Prince Rupert and Vancouver, B.C.; and Frobisher, Inuvik and Yellowknife, N.W.T.

Of the 489 commercial air carrier operating services in Canada, 292 were Canadian and 197 were foreign and Commonwealth. There were 4,914 registered aircraft, an increase of 367 over the previous year. The greatest increase was in the private category, with a registration of 2,869 compared with 2,513 in 1959. Of the 3,489 private pilots licensed, 2,624 were trained



"Palletizing", or the strapping of loads of freight to pallets which are then fork-lifted into aircraft, has vastly speeded operations at both ends of the flight.

under the Department of Transport's assistance plan. Seventy-six schools and 43 flying clubs took part in this training program.

The Canadian Airworthiness Council, created in 1959, acted in an advisory capacity on questions of aeronautical engineering, airworthiness, inspection, maintenance and certification of aircraft and related matters. It maintained close liaison with the United States Federal Aviation Agency.

The bulk of Canada's freight and passenger air service is provided by the Trans-Canada Air Lines and the Canadian Pacific Air Lines. TCA, a publicly owned company, was created by Act of Parliament in 1937. At that time TCA's operations consisted of running a 122-mile route with a single aircraft. At present TCA is carrying out a gradual program of switching completely to turbine-powered aircraft. By the end of 1961 its fleet will consist of 23 Vanguards, 49 Viscounts and 10 DC-8's. The fact that these are all Rolls Royce engines makes TCA the first airline in the world to have only one power plant supplier. During 1961 all TCA's piston engine aircraft—Super-Constellations, North Stars and DC-3's—will be retired from service. The new Vanguards, first on the North American continent, with a cruising speed of 425 m.p.h. and a range of 2,800 miles, run the short and medium length routes in Canada and from Canada to the United States, Bermuda and the Caribbean.



In addition to its passenger and combined passenger and cargo flights, TCA operates a scheduled transcontinental service with all-cargo aircraft, each capable of carrying nine tons

This trainer helicopter rises 75 feet from the ground, can hover, move up or down or sideways, turn on its axis and duplicate the motions of a real helicopter. Used to train pilots in Edmonton, Alberta, it is very much less expensive as a trainer than using a helicopter.

of freight. Canadian shippers enjoy a high standard of service, being assured of next-day delivery to cities within a 1,500-mile radius and second-day delivery to points beyond. In providing general air carriage for first class mail in Canada, TCA, in co-operation with the Canadian Post Office Department, again contributed to one of the world's most expeditious mail delivery systems.

At the close of 1960, TCA routes stretched 31,000 miles within North America and to the British Isles, continental Europe and the Caribbean, with 59 communities being directly served. Its staff numbered 10,500.

Anticipating the impact upon airline reservations procedures of the new speed and scale of air transportation, TCA undertook, in conjunction with Canadian electronic manufacturers, the design of an electronic and fully automatic reservations system. An order was placed for this equipment in 1959 and when it becomes operative in 1962 it will ensure almost instantaneous response to reservations requests and will reduce possibilities of error to an absolute minimum. It will be the most modern such system employed by the world's airlines.

The Canadian Pacific Air Lines came into existence in 1942 as the result of the consolidation of a number of independent companies engaged in flying in Canada's northland. In 1949 this company was designated to provide trans-Pacific services on behalf of Canada and later it added other overseas routes until, today, it is one of the largest world carriers in terms of unduplicated route-miles. Its South Pacific service links Canada with New Zealand, Australia, Honolulu and Fiji, and a northern route extends to Japan and Hong Kong. Frequent flights cross the Arctic from Vancouver to Amsterdam, and an Atlantic service operates to Portugal and Spain. A South American network serves Mexico City, Lima, Santiago and Buenos Aires. In 1959 CPA was designated as the Canadian carrier to provide air service between Canada and Italy and, in March, 1960, it inaugurated flights between Canada and Rome. It also began a daily Canadian transcontinental service between Vancouver and Montreal.

New equipment placed in service in 1959 consisted of two Bristol Britannia turboprop aircraft. An order was placed for four DC-8 jetliners.



In 1960, licences were issued to 3,489 private pilots and 2,869 privately-owned aircraft. Private airports, such as this one, totalled 705. There were also 154 municipal airports, 138 belonging to the federal Department of Transport, and 83 owned by the Armed Services.

In 1960 the northern Ontario section of the Trans-Canada Highway reached the town of Wawa. At the entrance to the town this monument of the wawa (Indian name for goose) was erected.



Though Canada's aviation spotlight tends to be directed on TCA and CPA, extensive scheduled service is provided by a number of smaller carriers—in the lower St. Lawrence area by Quebecair; in the Atlantic and Pacific coast areas by Maritime Central Airways and Pacific Western Airlines, respectively; in northern Manitoba and western Ontario by Trans-Air of Winnipeg. Non-scheduled services are operated by most of the independent lines. They provide effective access to sections of Canada that are inaccessible by other means of transportation and act as feeders to the scheduled airlines. Their specialty services include recreational flying, aerial photography and surveying, aerial pest control and aerial advertising.

Highways and Roads

Canada's road-building program is still on the increase. Since the end of the Second World War, governments at the three levels have spent approximately \$6,500,000,000 repairing, rebuilding and extending highways, roads and streets in an endeavour to meet the demands of motor traffic. Surfaced mileage, which stood at 131,000 miles in 1945, increased to 251,000 miles by the end of 1958. During that year alone \$773,000,000 was spent on highways and rural roads and \$164,000,000 on urban streets, sidewalks and bridges—a total of \$937,000,000.

The chief spending agencies are the provincial governments, which accounted for 68 p.c. of the total in 1958, including assistance to municipalities. Federal Government expenditure accounted for 11 p.c. and municipal and other agencies for the remainder.

Work on the Trans-Canada Highway has been completed in Prince Edward Island, Manitoba, Saskatchewan and Alberta, and is nearing completion in several other provinces. All sections of the Trans-Canada Highway are now open for travel except for the Rogers Pass in British Columbia.

Expenditure by the province of Ontario tops that of any other road-building agency and that of Quebec ranks second. City traffic congestion is being countered by changes in traffic arteries, skilful use of traffic control devices and channelling, and by the construction of expressways which are under way in Toronto, Montreal, Ottawa and Vancouver.

Federal Government expenditures on roads will show a decided increase over the next seven years as a result of the inauguration of the "Roads to Resources" project, whereby the Government of Canada will share with the provinces one-half the cost of building over 4,000 miles of roads into undeveloped and underdeveloped areas, involving an expenditure of \$150,000,000. The first project under this plan is a 255-mile road which will open up to development a large and comparatively inaccessible region of northwestern British Columbia. The Federal Government, in addition, has undertaken a seven-year \$100,000,000 program of road-building in the Yukon and Northwest Territories, also for the purpose of opening up resource-development areas. A road from the Mackenzie Highway around the west end of Great Slave Lake to Yellowknife was opened for traffic in 1960. Also completed is the 23.7 mile Fort Fitzgerald—Fort Smith road by-passing the rapids on the Slave River, which prevent through navigation between Waterways and the Arctic Ocean.

Motor Vehicles

Motor vehicle registrations continue to increase year by year, reaching a record 5,017,686 in 1959 compared with 4,675,560 in 1958. Of the total, 3,812,422 were passenger car registrations (one for every five Canadians), 1,171,097 were commercial vehicles (including 1,097,977 trucks, 16,280 buses and 56,840 other types) and 34,167 were motorcycles. Registrations in the different provinces were: Newfoundland, 51,145; Prince Edward Island, 27,502; Nova Scotia, 189,435; New Brunswick, 129,629; Quebec, 1,040,366; Ontario, 1,973,737; Manitoba, 269,974; Saskatchewan, 326,690; Alberta, 456,458; British Columbia, 545,491; and the Yukon and Northwest Territories, 7,259.

Provincial revenues from motor vehicle registrations and licences also reached a new high at \$162,074,455, an increase of \$16,025,739 over 1958. Gasoline tax revenues rose to \$376,728,495 derived from the sale of 2,865,034,346 gal., most of which was consumed by motor vehicles.

The supply of new passenger vehicles in 1959 amounted to 439,773 cars, 55,091 more than in 1958. The 1959 total included 285,841 cars manufactured in Canada and 153,932 imported cars. During 1959, 425,038 passenger cars were sold, valued at \$1,240,961,000, as well as 77,588 trucks and buses valued at \$299,207,000.

In spite of an accelerated program of safety education and, in some provinces, increased penalties for dangerous driving, motor vehicle traffic



The footbridge across the Pelly River where the 150-mile Canol Road in the Northwest Territories ends. This road is now open to tourists and big game hunters.

accidents on Canada's streets and highways increased by 6.6 p.c. to 242,429 in 1959 from 227,451 in 1958. They took 36 more lives at 3,231 and injured 5.8 p.c. more persons at 84,751.

Motor Transport. The extension and improvement of Canadian highways and technical improvements in equipment have encouraged a continuous expansion in freight traffic on the roads. High-speed expressways and regular schedules operated by the carriers have vaulted the industry into a role of national importance.

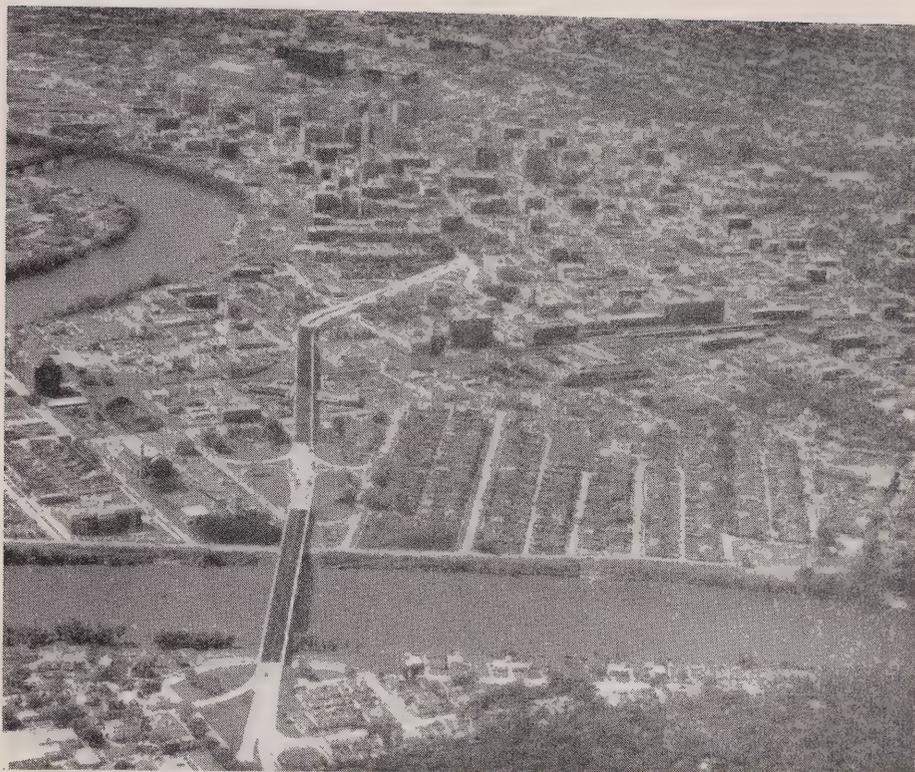
Motor transport traffic surveys have been conducted in all provinces on a continuing basis since 1957 by means of random samples of vehicles selected from provincial registration records. Excluding vehicles which do not perform normal transportation services such as cranes, tow trucks, road-building equipment, etc., the number of trucks and road tractors licensed in Canada during 1958 averaged 862,775. These vehicles travelled 6,616,012,000 miles for an average distance of 7,700 miles each and carried 460,313,000 tons of goods to perform 15,645,283,000 ton-miles.

Trucks operating for hire averaged 50,503 or approximately 6 p.c. of the truck population in 1958. They travelled 1,299,274,000 miles or nearly 20 p.c. of the miles covered by transport trucks. Revenue earned by trucks for hire was \$630,999,000, an average of \$12,500 per vehicle and 6.8 cents per ton-mile.

Scheduled and chartered intercity buses operated by the larger companies carried 48,827,212 passengers in 1959 compared with 50,034,888 in 1958. On the other hand their vehicle miles increased to 80,734,020 from 80,611,351 in 1958 and their operating revenues rose to \$39,996,121 from \$39,412,512. The average fare per passenger was 82 cents in 1959, indicating that short-distance travel was the mainstay of operation.



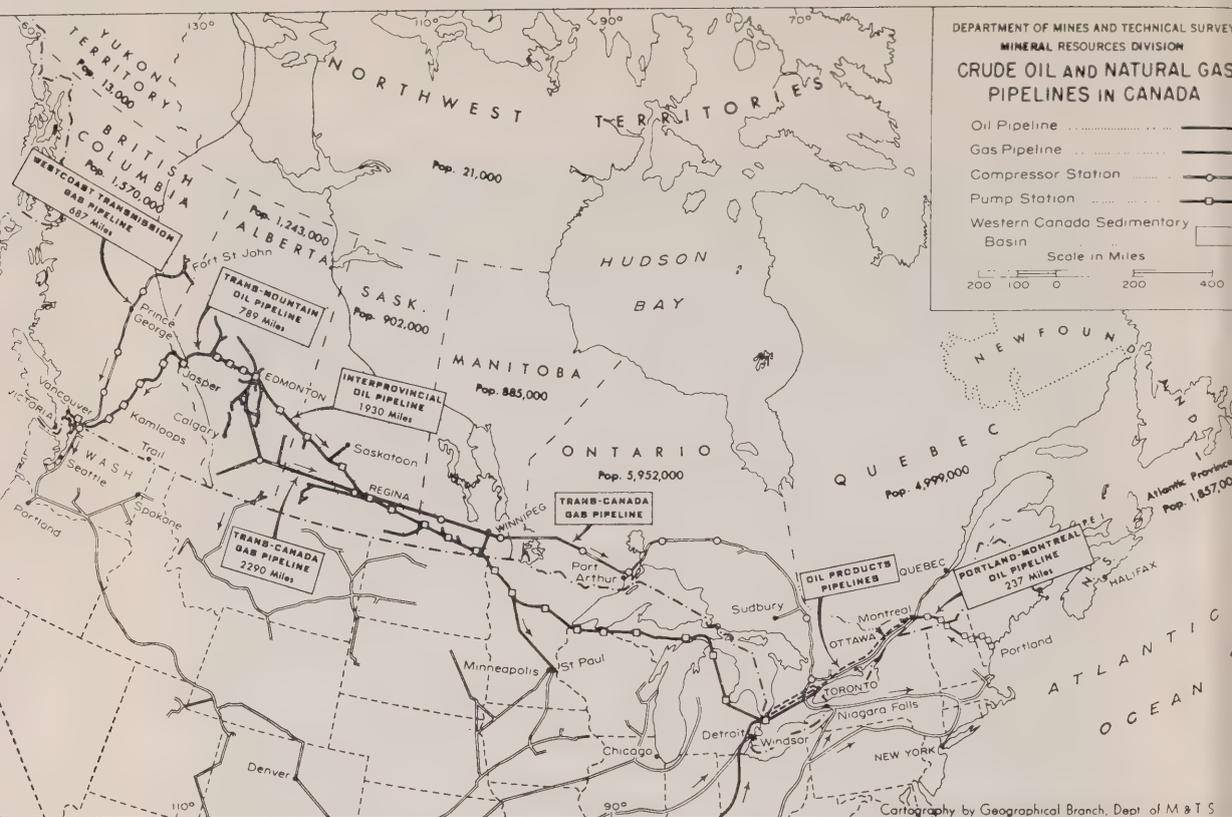
With the staggering increase in the number of personal cars, the problem of parking them has assumed paramount importance in all the larger municipalities. In this picture is a section of downtown Toronto which cleared blocks of buildings from valuable land to provide parking lots.



The Disraeli Freeway into downtown Winnipeg was opened in 1960.

Urban Transit Services. Change marks the operations of urban passenger-transport services. The motor bus with its greater speed and manoeuvrability has almost completely replaced the electric railway. By the end of 1959 Toronto was the only city with street cars. The trolley bus, a transition vehicle between the electric car and the motor bus, is also losing favour. The much greater use of private motor vehicles within the towns and cities and to and from the newly developed suburban areas has reduced greatly the number of passengers carried in public conveyances. The transit services are at the same time faced with increasing costs of operation and much greater areas to service. Attempts to cover the added expenditure by higher fares or by diminished service have tended to defeat their own purpose.

In 1959 urban transit systems carried 1,056,812,775 passengers as compared with 1,079,712,025 in 1958, continuing the downward trend in evidence since 1949. However, it is noteworthy that during 1958 and 1959 in the larger centres, where traffic and parking problems are increasing, the passenger load remained fairly stable or actually increased, which may indicate a future trend. The Toronto system, the only one in Canada operating a subway, transported 35,869,394 passengers in 1959 compared with 35,932,278 in 1958. Transit systems operating in the larger urban areas are mostly municipally owned but in the smaller centres private ownership is more prevalent.



Pipelines

Although pipelines have long been used to transport water, pipeline systems for this purpose have essentially been local in nature and only seldom extend beyond the limits of a municipality. Consequently, the mileage of transmission water lines can be measured in terms of a few hundred miles. Oil and gas pipelines, on the other hand, have been constructed in Canada in recent years on a very large scale. The construction of the Interprovincial Pipe Line Company's system in 1950, for transporting crude oil from the Prairie Provinces to Eastern Canada, marked the commencement of a new transportation era in Canada. The large reserves discovered in Western Canada could not have been exploited without pipelines to transport the crude oil and natural gas to markets. The cost of rail transport would have prohibited the transport of crude oil over long distances and there is no alternative to pipelines for the overland transportation of natural gas. As a result of the major pipeline construction program of the past decade, Canada now possesses a network of oil and gas pipelines which links the producing regions of the West with markets in Canada as far east as Quebec. This pipeline transportation system also provides for deliveries to markets in the western and north-central areas of the United States.

Although the year 1960 was not an outstanding one in respect to pipeline additions, approval by the Government of Canada of the recommendation made by the newly formed National Energy Board that gas export be permitted, and the subsequent approval of gas import by the authorities in the United States, set the stage for significant gas pipeline system enlargement.

Gas Pipelines

The two main components of Canada's gas transportation facilities are the lines of Westcoast Transmission Company Limited and Trans-Canada Pipe Lines Limited.

The Westcoast system collects natural gas in the northeastern region of British Columbia and the adjacent region of Alberta. The gas is transported by way of a 30-inch, 605-mile pipeline, originating at Taylor, British Columbia, where the Alaska Highway crosses the Peace River, and ending a few miles east of Vancouver, from which point a lateral line crosses the United States border. During 1960, Gas Trunk Line of British Columbia Limited, a newly organized company, completed 82 miles of 16-inch line in northern British Columbia to make additional reserves of gas available to the Westcoast line.

Trans-Canada pipeline, the longest gas pipeline in the world, stretches for 2,290 miles from the Alberta-Saskatchewan border to Montreal. From the receiving terminal to Winnipeg the line is 34 inches in diameter; from Winnipeg to Toronto, via northern Ontario, the line is 30 inches in diameter; and from Toronto to Montreal it is 20 inches. Trans-Canada supplies distribution companies in Saskatchewan, Manitoba, Ontario and Quebec. Gas is gathered for Trans-Canada by Alberta Gas Trunk Line, which enlarged its system in 1960 by constructing 72 miles of 24-inch pipe and 110 miles of small-diameter laterals in Alberta.

The distribution systems in each of the provinces from British Columbia to Quebec continued their expansion programs to meet the requirements of growing markets. As the result of construction work completed on gathering, transmission and distribution systems during 1960 total gas pipeline mileage was increased to 30,400 miles compared with 29,500 miles at the end of 1959.

In the fall of 1960, pipeline construction commenced on the Foothills Division gathering system of Alberta Gas Trunk Line Company Limited in preparation for the export project of Alberta and Southern Gas Co. Ltd. Alberta and Southern will export gas to the west coast region of the United States and the state of Montana. Alberta Gas Trunk will construct a total of 350 miles of main line and 121 miles of laterals to gas fields which are to be linked to the Alberta and Southern line. In British Columbia, also in



Laying the 51-inch pipeline from Winnipeg to the international border near Emerson, Manitoba. The first gas deliveries through this line to the United States took place in October, 1960.

connection with this project, work commenced on the 108-mile, 36-inch pipeline which will carry gas from the Foothills Division line to the British Columbia-Idaho border.

In 1960 utility sales of natural gas in Canada totalled 324,468,404 Mcf* as against 283,230,089 Mcf in 1959. Exports of natural gas to the United States in 1960 amounted to 112,480,760 Mcf compared with 83,175,601 in 1959.

Oil Pipelines

The principal components of Canada's oil pipeline system are the pipelines of Interprovincial Pipe Line Company, transporting crude oil from Edmonton eastward as far as Toronto, and of Trans Mountain Oil Pipe Line Company, operating from Edmonton to Vancouver and making deliveries to the Puget Sound area of the United States.

Interprovincial has two complete pipelines along the same route from Edmonton to Superior, Wisconsin, at the head of Lake Superior. These connect with a larger line, 30 inches in diameter, extending to Sarnia, Ontario, from which point a 20-inch line goes as far as Toronto. The company receives crude oil from six pipelines in Alberta, two in Saskatchewan and two in Manitoba, and from its own gathering line in Alberta. Interprovincial makes deliveries to two pipelines in Saskatchewan, two in Manitoba and three in the United States. The Interprovincial system, either directly or in conjunction with its connecting carriers, transports Western Canada crude oil to refineries located in Saskatchewan, Minnesota, Manitoba, Wisconsin, Michigan, and Ontario. Although no additions were made to pipeline mileage in 1960, increased pumping capacity was added to raise the system's throughput capacity.

Oil pipeline construction in Canada during 1960 was at a comparatively low level following the major construction program of recent years. A modest amount of construction work was carried out in the Peace River region of Alberta and British Columbia, and additions were made to the gathering system in the big Pembina oil field and in some smaller fields. At the end of 1960 there were 8,050 miles of oil lines in Canada compared with 7,800 at the end of 1959.

Net deliveries of crude oil in 1959 amounted to 308,491,162 barrels compared with 274,772,792 barrels in 1958. Net deliveries in 1960 maintained the level reached in 1959 which had established an all-time high.

* Mcf = 1,000 cubic feet.

Something new in transportation: a collapsible rubber fabric tank which can be filled in a few minutes and, when empty, rolled up compactly. In sizes from 10 gallons to 25,000, these containers are being used to transport wine, oil, chemicals, water, gasoline, paint. Similar containers are also made for static storage and for towing in water by a tug.





Changing a Geiger-Mueller tube in a "counter-tray". This equipment forms part of a "counter telescope" which monitors cosmic radiation at Resolute Bay, N.W.T.

Scientific Research

"Science"—simple word, complex theme. In Canada, variations on this theme arise from the country's geographic, economic, and political diversity. Provincial governments, industrial firms and universities are playing an increasingly important role in Canada's scientific research effort, but the main support continues to come from the Federal Government.

A recent survey made by the Dominion Bureau of Statistics jointly with the National Research Council gives a good idea of the magnitude of scientific activities undertaken by the Federal Government in 1959, together with an indication of the size of the 1960 program.

Total estimated expenditures for 1959-60 were \$212,300,000 as against \$222,600,000 spent in 1958-59, the decrease of 4.6 p.c. being due largely to a decline of 9.9 p.c. in development contracts for the armed services. This means that the civilian branches—which include all departments and agencies except the Department of National Defence—actually showed an increase of 16.3 p.c. from \$127,000,000 in 1958-59 to \$147,700,000 in 1959-60.

There were 17,191 persons employed in all scientific activities; the civilian departments together with the Defence Research Board accounted for 15,091 personnel or 87.8 p.c.; the armed forces made up for the remaining 2,100 personnel or 12.2 p.c. The ratio of supporting personnel to professional staff was about three to one; about half of the professional scientists employed by all departments (excluding armed forces and Defence Research Board) were physical scientists, almost 42 p.c. were life scientists, and the rest were administrators of scientific programs or performed other duties relating to the conduct of research and development.

Recent creation of a federal Department of Forestry, with emphasis on its research functions, is an indication that a large segment of science for primary industries will continue to be organized on a national scale.

Capital expenditures on research and development amounted to \$30,700,000 in 1958-59 and \$33,000,000 in 1959-60, an increase of \$2,300,000. Almost all of this investment is accounted for by six organizations as shown in the table below:

<u>Department or Agency</u>	<u>1958-59</u>	<u>1959-60</u>
	\$'000,000	\$'000,000
Atomic Energy.....	10.2	11.7
Agriculture.....	5.3	6.7
Defence Research Board.....	5.6	6.3
National Research Council.....	2.7	4.6
Mines and Technical Surveys.....	4.1	1.6
Fisheries Research Board.....	1.4	1.1

In Atomic Energy, much of this expenditure reflects the long-term nuclear reactor program; in Agriculture, the K.W. Neatby Building was officially opened in June 1960 as headquarters of the Research Branch; in Mines and Technical Surveys, the Ottawa laboratories were consolidated on one site; in the Defence Research Board, the research centre at Shirley's Bay was enlarged and a laboratory at Prince Albert was opened; at the National Research Council, a new building was started to house the Division of Applied Physics; at the Fisheries Research Board, the move is "from the beach to the open ocean", as the commissioning of the new Motor Vessel *A. T. Cameron* indicates.

The policy of building off-shore vessels for fisheries research has been broadened to include the general field of oceanography. The Canadian Joint Committee on Oceanography—in which the Defence Research Board, the Hydrographic Service of the Department of Mines and Technical Surveys, the Fisheries Research Board, the Meteorological Service of the Department of Transport, the National Research Council, and the Royal Canadian Navy



Canada studies her waterfowl population for statistics and behaviour at Delta Waterfowl Research Station, Delta, Manitoba. Here in an enclosed pond at the station, Dutch-type nests are set out.

cooperate—has assigned a major share in this research task to the Department of Mines and Technical Surveys.

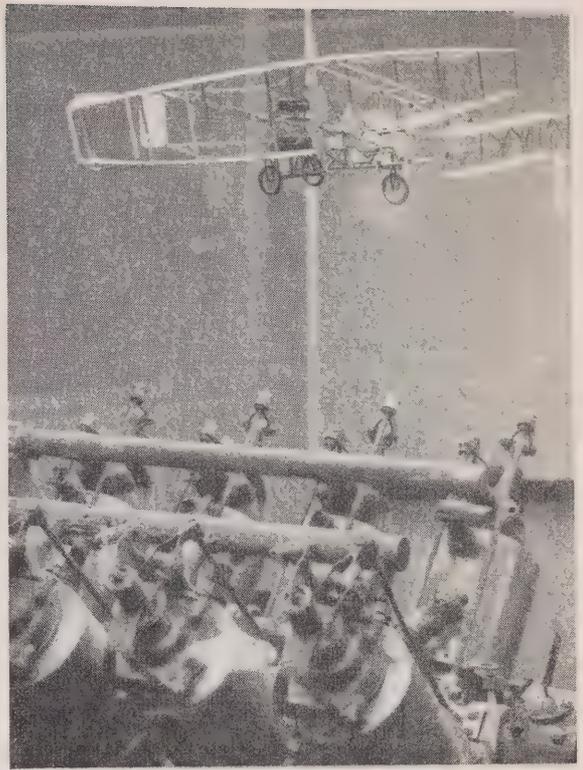
A multi-million dollar ship-building program will provide a fleet of oceanographic vessels, intended for year-round duty; the larger ships—such as the *C. G. S. Hudson*, to be commissioned in 1962—will be capable of working anywhere in the world.

Next year will also see the completion of the Bedford Institute of Oceanography, which is being erected near Halifax at a cost of about \$3,000,000 and will house a staff of 300, comprising oceanographers, hydrographers, submarine geologists, etc.

Provincial research agencies play an important role in developing highly diversified research activities of benefit to both primary and secondary industry. No survey of research expenditures on the provincial level has as yet been attempted. Much research in the provinces is being done by provincial research councils or foundations and by specialized agencies, such as hydro-electric power commissions; close links also exist between provincial departments and university laboratories.

At the universities, most of the outside support for scientific endeavours comes from the Federal Government in the form of bursaries, fellowships, and grants-in-aid of research. Last year, this assistance amounted to more than \$12,000,000. The balance of sponsored and assisted research funds (about 30 p.c.) comes from provincial and local governments as well as from private sources.

The amount spent on research by secondary industries in Canada has increased from a yearly outlay of less than \$5,000,000 before World War II to well over \$100,000,000. Yet this is still only a fraction of the amount for research which is invested by industry in the United States or the United Kingdom, whether compared on the basis of gross national product or of population. The difference can be partly explained by the relative smallness of most Canadian companies in comparison with their American or British counterparts and by the dependence of many of them for research on parent organizations in other countries. Nevertheless, there have been encouraging indications—especially in the past decade—of an expanding industrial research effort and, perhaps more important still, of an increasing awareness that this effort is essential to the health of Canadian industry.

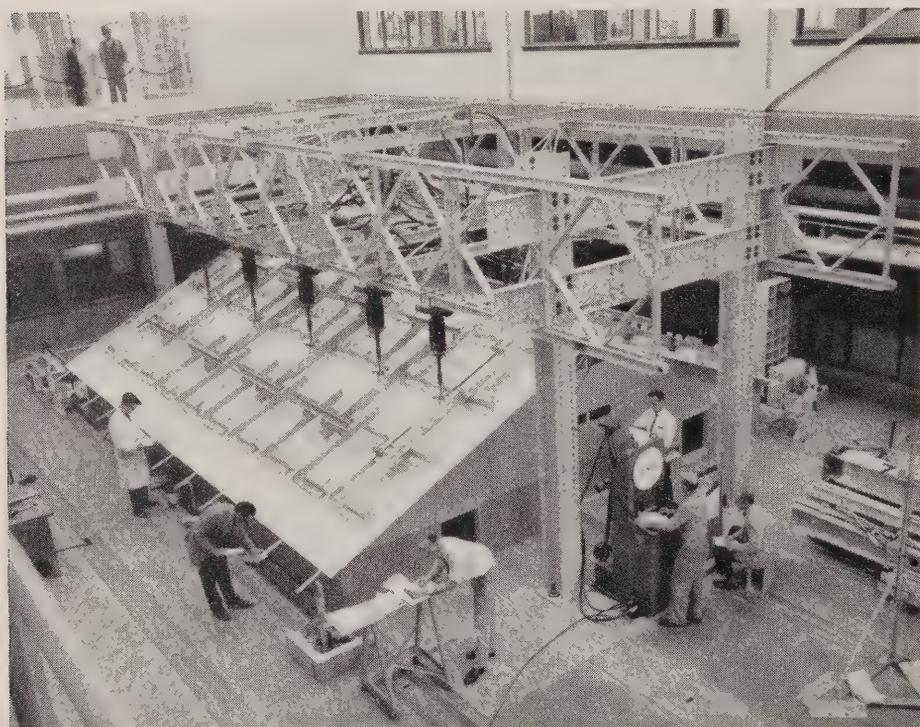


Displays showing the development of Canadian aviation over the past 50 years are contained in the National Aviation Museum in the Ottawa Air Terminal Building. Here, on display, are the original Silver Dart engine and a model of the aircraft which was the first plane ever flown in the British Commonwealth.

The National Research Council. The most diversified program of civil research in Canada is carried out by the National Research Council. Its laboratories, at Ottawa, Saskatoon and Halifax, are engaged in many investigations of interest to Canadian industry. Many are undertaken on the initiative of the Council itself in order to develop promising ideas of its own scientists. Some are taken up on recommendation of the Council's associate committees, which include representatives from industry who are interested in particular problems. Others are undertaken in co-operation with individual companies. Routine test work is avoided except when the Council is asked to certify performance of equipment in its capacity as an independent body.

A major change last year was the transformation of NRC's Division of Medical Research into a virtually autonomous Medical Research Council.

One of NRC's most interesting endeavours last year—illustrating both its national and its international aspects—was its contribution to the adoption of a new world standard of length; delegates from 30 countries unanimously agreed that the international standard for the metre should no longer be a metal bar kept in France, but should be defined as a specific number of wave-lengths of orange light emitted by the gas krypton. Canadian scientists made important contributions towards compiling evidence for adoption of the new standard. The world's only working apparatus using the new standard for directly measuring linear scales was designed and built at NRC. This instrument was used to measure the length of four different copies of the old standard metre bar. The result reassured the delegates from other countries of the value of the new standard.



A simulated snow load is being applied to a full-scale house roof by means of 12 hydraulic jacks which are supported by a reaction framework. Deflections are being measured at various points on the roof.

Canadians have played a prominent research role leading to the adoption of a new international definition of the metre: instead of a metal bar kept in France, the new international standard is now defined at a specific number of wave lengths of orange light as emitted by an isotope of krypton.



One of the advantages of the new standard is that it can be readily and accurately reproduced anywhere in the world by any well-equipped physics laboratory. Unlike the metal bar it cannot be destroyed, lost, or affected by changes in temperature or pressure. The new standard is available in all countries and there will be no further need for prolonged comparisons of "standard" bars of metal. The new definition will facilitate accurate linear measurements in many industries.

In cooperation with provincial research councils and foundations NRC operates a Technical Information Service to help bridge the gap between the fund of technological know-how already available and the needs of companies with little or no research experience.

The TIS has a staff of professional engineers and scientists at Ottawa and also maintains field men in the main industrial centres of the country, most of whom are attached to the provincial research councils. Where a problem is of wide interest, a report is prepared by the TIS for general distribution. These services are provided without cost to the industry. Last year, inquiries were handled at a rate of about 1,000 a month!

The NRC also advises the government on scientific matters generally; moreover, it gives financial help to scientific societies in Canada as well as to international congresses meeting here, an activity which has become particularly well established over the past decade. In 1960, for instance, Canada was host to meetings of the International Union of Pure and Applied Physics; in 1961, the 18th International Congress of Pure and Applied Chemistry is meeting in Montreal; in 1962, Montreal will be host city to the Eighth International Congress for Microbiology.

Finally, it remains one of the most important functions of the National Research Council to provide direct aid to science in the universities. In 1960, out of the Council's budget of \$35,000,000, more than \$8,000,000 were devoted to scholarships and grants-in-aid of research.

Canadian Patents and Development Limited. This company was set up in 1948 as a subsidiary of the National Research Council to handle the patenting and licensing of inventions made by scientific workers of NRC; it has since taken over similar work for most of the other government departments and many Canadian universities.

At present there are more than 500 inventions available for licensing. Altogether, more than 300 patents have been licensed to industrial companies in Canada and abroad. Patents available for licensing are listed in a Patents Handbook distributed to industry.

Exchange agreements are in operation with similar patent organizations in the United Kingdom and India; moreover, patents are exploited in North America for scientific organizations in Australia, New Zealand, and South Africa. Various commercial agencies in foreign countries are also active in promoting inventions for Canadian Patents and Development, with the result that inquiries from foreign countries are very much on the increase.

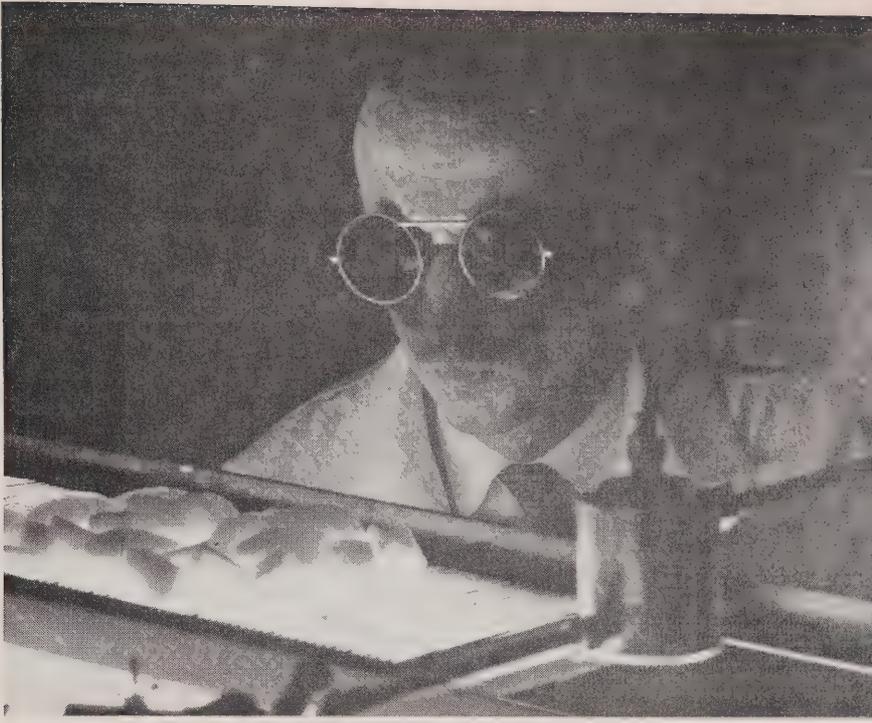
The Defence Research Board. The formulation of broad general policies for defence research and development in Canada, together with the co-ordination of the defence research program in the universities and with industry and government agencies, is the responsibility of the Defence Research Board. The Board has been functioning since 1947 under the National Defence Act and is made up of a chairman, a vice-chairman six ex-officio members and a number of appointed members.

In addition to its Ottawa headquarters, the Board has an operational research group and eleven field research stations across Canada, as well as liaison offices in London and Washington. Its efforts are concentrated on defence problems of particular importance to Canada or on those problems for which Canada has unique resources or facilities. Existing research facilities are used wherever possible to meet the needs of the Armed Forces and new facilities have been built up only in those fields that have little or no civilian interest. All operations are co-ordinated with developments in the United Kingdom and the United States in order to eliminate any duplication of effort.



Meteorological research is important in transport, communications, agriculture and other fields. In the dome of the weather station building at Maniwaki, Quebec, a technician tracks down a balloon and radiosonde transmitter by radio direction finder, thus recording direction and velocity of the wind at upper air levels.

Treating apples
with infra-red ra-
diation.



Medical Research

Medical research in Canada is carried out in universities, in hospitals, in special institutes and in government laboratories as well as through field operations of public health services. In the universities research is found in departments of basic medical sciences, medical departments and in hospitals used for teaching medical students. Research is also found in some non-teaching hospitals across Canada, including mental institutions, both as part of the usual institutional procedure and as special investigative units; included in this group are several hospitals supported by the Department of Veterans Affairs.

Notable additions to the university and hospital research localities mentioned above are the Defence Research Medical Laboratories near Toronto, the research carried on in laboratories of the Department of National Health and Welfare in Ottawa, and research in special buildings and institutes on university grounds and with university connections but operated in some degree independently; these include, in Toronto, the Connaught Medical Research Laboratories, the Banting and Best Institute, the Charles H. Best Institute and, in Montreal, the Institute of Microbiology and Hygiene, the Allan Memorial Institute and the Montreal Neurological Institute.

Public health services vary from province to province but generally include traditional immunization, school health and mother and child work, as well as some rehabilitation, hospital and diagnostic services.

Medical research ranges over the whole field of diseases that afflict man, although with some emphasis on Canadian medical problems. It includes fundamental research such as structural changes as shown on the electron-microscope, the mechanism of insulin action or the development of atherosclerosis. Much is going on in bacteriology, immunology and virology both for the elucidation of disease processes, for identification of causative agents and for practical control; for example, testing poliomyelitis live virus preventive treatment or comparisons of drug treatments for tuberculosis.

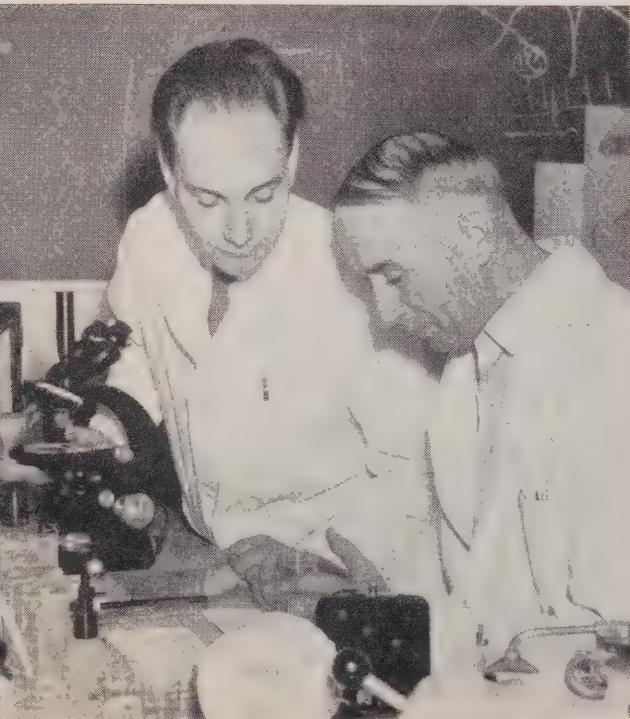
Diagnostic research is going on in many subjects ranging from urine analysis to obscure blood changes in rheumatic and mental diseases. In treatment the use of heart-lung pumps and hypothermia for cardiac and general surgery is constantly being improved by further research.

The basic medical sciences such as physiology, biochemistry, and pharmacology are well represented in Canadian research.

Attention to medical research in Canada may be considered as starting in 1921 with the discovery of insulin. At that time research was left strictly to the universities and the individual interests of people on their staffs who recognized that a university must not only preserve knowledge and teach students but also be active in scientific discovery so as to inspire their students to practise medicine as a science.

In 1938 the Associate Committee for Medical Research of the National Research Council began giving grants-in-aid of research on a small scale. This was greatly increased during the war years in relation to problems that might support the Armed Services. Thus universities were plunged into an era of "purchased" research which tended to overshadow their traditional role in fundamental research. In 1946, after a Defence Research Board had been set up for the Services, a Division of Medical Research was established in the National Research Council to continue the support to universities. From a beginning of \$200,000 yearly its support has now grown to around \$2,000,000.

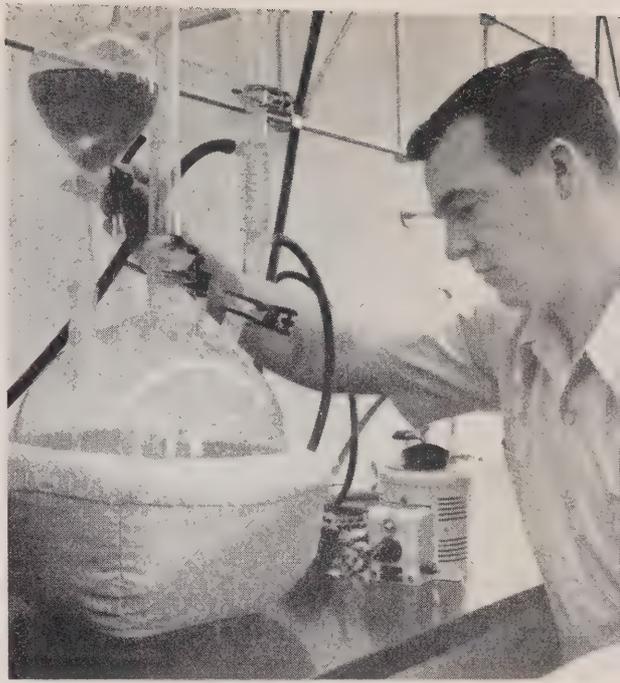
Universities make very important contributions to research in the form of salaries of senior staff who supervise research and in building space, library and administrative services. Part of these contributions may come indirectly from the general grants to universities made by provincial and federal governments; part comes from gifts or designated funds from foundations (e.g. J. P. Bickell, Atkinson, Life Insurance Officers Association, Banting Research Foundation) as well as from voluntary associations for research in cancer, arthritis, heart disease, etc.



Increasingly, however, universities need governmental support. In addition to the above-mentioned research grants to universities from the National Research Council, the Defence Research Board continues to purchase research on subjects of defence importance. In 1948 the Department of National Health and Welfare established health grants to assist provincial health departments in improving the services that would help the health of Canadians. In addition to a research portion in grants

Research into the causes of multiple sclerosis is carried on in a university laboratory.

Many private industries maintain research laboratories. Here a research technologist concentrates a pectin solution under vacuum.



especially for mental health, cancer, child and maternal health, diagnostic services, rehabilitation and now hospital services, there is also a public health research grant. Although all kinds of research have been supported by national health grants, these grants may be considered as designed for operational research—that is, designed to provide to those who need it information on which to base action. Examples of such people might be a clinician choosing a drug or an operative technique, a hospital administrator studying the efficiency of a service or a health officer studying transmission and control of disease.

From a start in 1948 of \$150,000 for medical research, the national health and welfare grants are currently near \$3,000,000 annually. Total governmental support to medical research thus exceeds \$5,000,000 a year. In addition, considerable sums are given for research by the National Cancer Institute, the National Heart Foundation and many other bodies that may or may not receive a portion of their funds from the government. An overall total of expenditures on medical research in Canada can not be established with present information but may reach \$10,000,000 annually.

In February, 1958, the Privy Council Committee on Scientific and Industrial Research named a Special Committee on Medical Research to review governmental support in this field and its coordination. The latter Committee submitted a report recommending:

1. that there should be a Medical Research Council to advise on policy and to take over the work of the National Research Council Division of Medical Research;
2. that the present medical research responsibilities of National Health and Welfare, Defence Research Board and Veterans Affairs should be continued “in their own special field of interest”; and
3. that greatly increased funds for medical research should be made available, especially to universities, by the new Medical Research Council and for the other agencies “as may be required for the normal growth of their programs”.

In June 1960, the Government of Canada tabled the report in the House of Commons, thereby indicating general acceptance and marking a milestone in medical research in Canada, not only for the universities with their responsibilities for free research but also for all other agencies in their special fields of interest. The formation of the Medical Research Council as an autonomous unit of the National Research Council was announced in November 1960, with a membership composed of 15 outstanding medical men from Canada’s 12 medical schools.

Atomic Energy in Canada

Three government organizations have basic responsibilities for Canada's atomic energy activities: the Atomic Energy Control Board, responsible for all regulatory matters concerning work in the nuclear field; Eldorado Mining and Refining Limited, a Crown company with a double function as producer of uranium and as the Government's agent for buying uranium from private mining companies; Atomic Energy of Canada Limited, a Crown company concerned with nuclear research and development, the design and development of power reactors, and the production of radioactive isotopes and associated equipment.

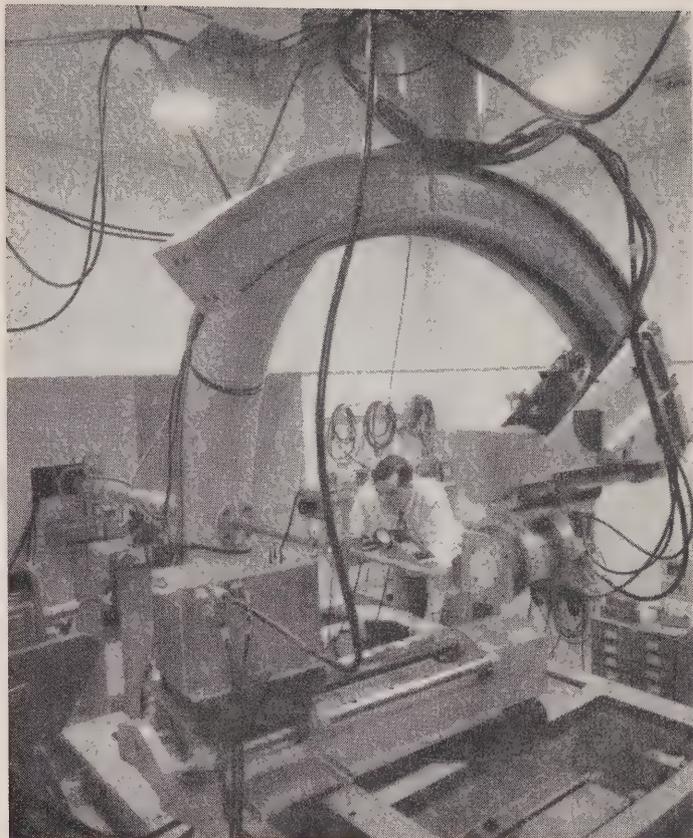
The Atomic Energy Control Board, at present a five-man body including the presidents of the two Crown companies, was set up in 1945 principally to control the distribution of fissile and other radioactive material. The activities of the Board have increased with the expansion of the Canadian nuclear program until, today, they include all regulatory matters such as the licensing of reactors, financial assistance to Canadian universities engaged in nuclear studies, etc.

In recent years uranium production has played a large part in the Canadian economy. In 1959 production reached 15,900 tons of uranium oxide. Its value exceeded that of all other metals produced and, among all minerals, was second only to petroleum. As an export commodity, it was exceeded in importance only by wheat and forest products. In 1960, Eldorado's deliveries fell to 12,500 tons of uranium oxide; this fall reflected the fall in demand from Canada's main customer, the United States.

For the greater part, the mining operations themselves are conducted by private companies, and activities in this sphere are at the present time in an unsettled state. Atomic energy activities in many countries originated as and have been characterized by a rapid expansion of mining operations to supply uranium for military uses. This growth has been accompanied by an inherently much slower technological development towards harnessing nuclear energy for electric power generation, ushering in a more durable phase when the principal uses of uranium will be civilian rather than military. Unfortunately for the mining industry, the demand in support of military uses is falling off before the civilian program can make use of the full production capacity. The situation in Canada has been relieved to some extent by stretching out to 1966, without increase in total supply, contracts that would have expired in 1962. Nevertheless, many of the less economic mines have had to close down. Thus, in the four principal uranium producing areas in Canada (Great Bear Lake, N.W.T., Lake Athabasca, Sask., Elliot Lake and Bancroft, Ont.) only two of the original six concerns at Beaverlodge on Lake Athabasca are still in operation, and only seven of the original eleven in the Elliot Lake area. In addition to this, the Eldorado mine at Port Radium on the Great Bear Lake exhausted its ore body during 1960, and closed after 27 years of operation. This mine was opened when radium was the main interest, and uranium a worthless by-product.

In contrast to that of the uranium industry, the picture of AECL activities is much brighter, and it now seems that, in certain areas, economic nuclear power generation will be achieved in Canada within relatively few

Target room of the tandem accelerator at Chalk River. This machine has been used in the study of nuclear structure and it was announced in 1960 that, with the aid of the accelerator, physicists discovered a nuclear reaction in which carbon nuclei interact closely as a sort of nuclear molecule.

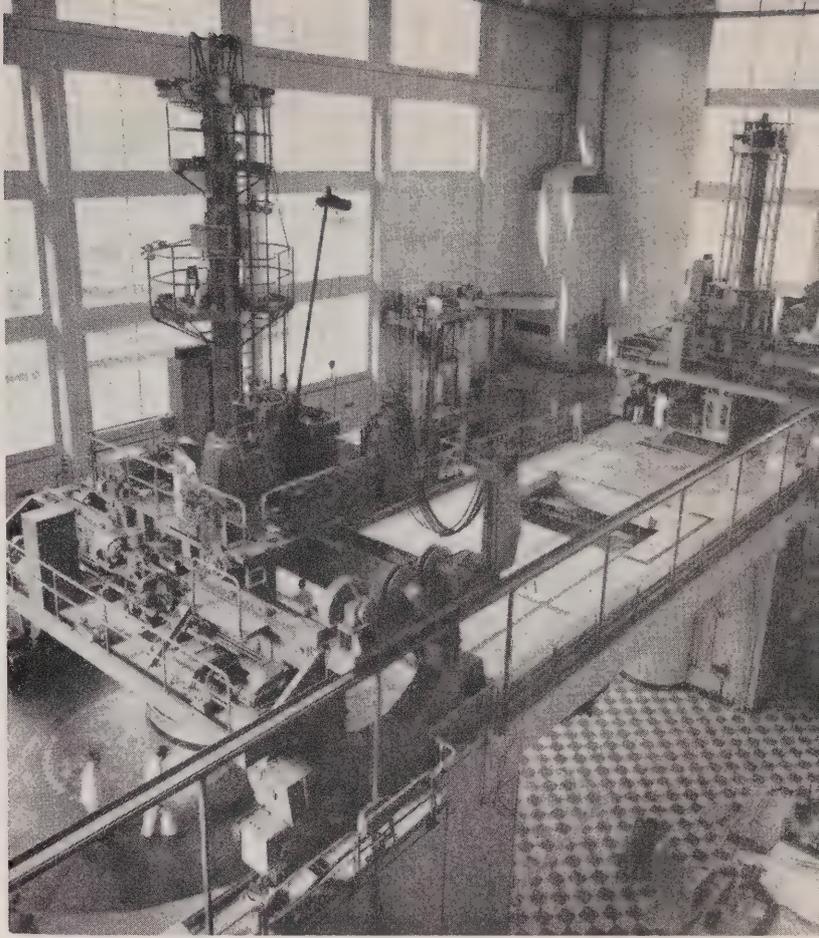


years. Of the diverse reactor types that can be conceived for power generation, AECL chose the heavy-water-moderated, natural-uranium reactor as being the most suitable under Canadian conditions. Of the many reasons for this choice, the principal one is that heavy water permits a very high burn-up of the fuel in a single pass through the reactor; this, combined with the low cost of natural uranium, results in a very low total fuel cost. In fact, the Canadian nuclear power program is unique in that it aims for such a high burn-up that used fuel elements may be discarded as waste rather than put through expensive recovery processes for extraction of plutonium and unburned uranium. To achieve this end, AECL's research program has placed great emphasis on fuel development, thermal-efficiency improvement, and the reduction of "over-design" in systems and components, with special attention on neutron economy in the reactor core. The latest tests indicate that the high burn-up required is well within reach for the uranium oxide fuel elements being designed for the 200 electrical megawatt CANDU power reactor, now under construction at Douglas Point on Lake Huron. The current design and expected performance of this reactor represent a considerable advance over that originally conceived in 1956. This is evidenced by the fact that, for the same electric power output, the reactor power has been brought down from 790 to 700 megawatts and the total length of fuel rods from 86 to 30 kilometres. As a result, the prospective fuel costs have dropped from 1.85 mill/kwh. to 1.1 mill/kwh. In an industry in which the economic prospect is largely a matter of fuel costs, this reduction is significant and bears the promise that continued progress will lead to even lower fuel costs.

Of course, heavy-water natural-uranium reactors do have disadvantages, not the least being their high capital cost. However, in Ontario, where the publicly owned utility (The Hydro Electric Power Commission of Ontario) can borrow money at low interest rates, and where large base-load stations are required, the component of power cost due to capital is tolerable. Under these special circumstances, it is probable that a second CANDU type reactor, incorporating capital economies resulting from the experience gained in the construction of the first, would generate electricity at a cost competitive with conventional stations. While emphasizing that this applies only to the special circumstances in Ontario, one must not forget that on the Canadian scene, it is only in Ontario, whose industries are at present fed by electricity generated from coal imported at \$8 short ton (a fuel cost of 3mill/kwh), that an urgent need for a new source of power is felt. In the western provinces, which have vast resources of natural gas and untapped hydro-electric potential, it is unlikely that any existing type of reactor could compete until its technology is more advanced. In northern Canada, where the small communities require stations of no more than about 40 electrical megawatts output, the situation is very much the same.

The major AECL research facilities required for pursuing this goal of economic nuclear power are located at its Chalk River, Ontario, plant. The Head Office and the Commercial Products Division, concerned with the production of radioactive isotopes and associated equipment—for example the cobalt-60 beam therapy units used in the treatment of cancer—are located in Ottawa. The design and construction of the CANDU power plant is being carried out in co-operation with Ontario Hydro by AECL's Nuclear Power Plant Division in Toronto. In order to keep abreast of the rapid development of nuclear technology throughout the world, and to stimulate the interest of private companies in the construction of power reactors, AECL devotes a major effort to co-operation with other organizations. Besides the collaboration on the CANDU project, a smaller power demonstration reactor, NPD is being constructed by the joint efforts of Ontario Hydro, the Canadian General Electric Company Ltd., and AECL. This project, which will feed 20 electrical megawatts into the Ontario Hydro system, is now nearing completion at Rolph-ton, near Chalk River, and is in effect a prototype CANDU plant. CGE has also been contracted to carry out the design and development of an organic-cooled reactor experiment, (OCDRE) and it seems likely that this will be the first reactor to be built at AECL's new research establishment now under construction in the Whiteshell forestry reserve of Manitoba. AMF Atomics Canada Limited and CGE are AECL's chief contractors for fuel-element fabrication. Other work related to Canada's nuclear power program is carried out in collaboration with other companies. These close ties are highly desirable in that they prepare private industry to take over the construction of power plants when the time arrives, leaving AECL free for fundamental studies and developing new reactor concepts. AECL also lends general support to the nuclear and related studies of Canadian universities, and lets contracts to the universities on specific problems. An Advisory Committee on Atomic Power Development keeps the various utilities fully informed of the progress being made towards economic nuclear power. This Com-

A unique feature of the NRU reactor is that it can be refuelled without shutting it down. Used uranium rods are drawn up into the 240-ton flask. A fresh rod is lowered into the reactor and the flask then travels across the bridge to the storage block where the used rod is lowered into the water-filled handling bay.



mittee, set up by the Federal Government in 1954, meets periodically at Chalk River to assess the economic prospects throughout the country.

In the international field, close ties are kept with the United States Atomic Energy Commission and the United Kingdom Atomic Energy Authority, both of which have representatives permanently at Chalk River. A new agreement with the United States provides for the free exchange of all technical data on heavy-water-moderated reactors and commits the USAEC to spend \$5,000,000 in the United States on research and development related to reactors of Canadian design. More or less formal collaboration has also been established with the International Atomic Energy Agency, the Organization for European Economic Development, and with Euratom, as well as with France, India, Japan, Pakistan, Sweden, Switzerland and West Germany. In India, construction and running-in of the Canada-India Reactor were completed during 1960, and the reactor was formally inaugurated in January, 1961.

The Chalk River project of AECL is not only concerned with the development of power reactors. A great deal of basic research is carried out by the project's 200 professional scientists and engineers. Supported by 300 technicians and about 1,800 other personnel in administration, design, operations, maintenance, transportation, etc., they carry out fundamental studies in such diverse fields as nuclear physics, nuclear chemistry, radiobiology, reactor physics, radiation chemistry, environmental radioactivity, physics of solids and liquids, and other subjects, using as their primary facilities the two major reactors NRX and NRU, the auxiliary reactors, ZEEP, PTR, and ZED-2, the tandem Van de Graaff accelerator and analytical facilities such as



Loading uranium fuel into the 100-watt ZED-2 research reactor at Chalk River. The reactor went into operation on September 7, 1960.

a precision beta-ray spectrometer, mass spectrometers, an electron microscope, multi-channel pulse analyzers, automatic recorders, analogue and digital electronic computers. In recent years a great technological advance has been based on the properties of nearly perfect crystals with controlled impurities, of which the transistor is the best known example. Studies of the energy changes of very-low-energy neutrons have greatly extended the knowledge of similar processes in solids and liquids; pioneer work in this field has been carried out at AECL.

The intense beams of neutrons provided by NRX and NRU have made possible studies that have attracted scientists from other centres. At present (January 1961) a team of U.S. and Canadian scientists is making close studies of neutron-nuclear interactions, while another team from the U.K. is examining the slowing-down of neutrons by various moderators. Including representatives from Canadian industry, attached staff numbers about 100.

For many applications, the value of NRX and NRU for experiments requiring high neutron flux will probably be surpassed by the still higher flux reactors and pulsed neutron sources driven by high-current accelerators now being planned in other countries. However, their value for engineering testing of materials under intense radiation seems likely to remain unsurpassed for many years. Their special advantage for these purposes stems from the fact that their size and construction allow quite large test samples to be inserted in the reactor core. Since 1950, NRX has been used for fuel test irradiations in high-temperature water, and has contributed to the design and operating conditions of the fuel in the U.S. nuclear submarines. More recent irradiations have provided a basis for the design of the fuel elements for the NPD and CANDU reactors.

Other projects outside the sphere of fundamental research and only indirectly related to the nuclear power program are under way. These include studies of potential accident conditions in and around reactors that might originate with, for example, a burst in a pressurized cooling system, studies

on the disposal of radioactive wastes and on the design of instruments to facilitate the fail-safe and dependable control of power reactors, to monitor radioactivity in flowing water, and for detecting traces of normal water in heavy water.

Because the CANDU type of reactor is economic only in large units, another type of reactor promising low-cost nuclear power generation in smaller amounts is under study. This is the organic-cooled reactor, in which the heat is removed from the heavy-water-moderated core by an organic liquid. If the problems associated with radiation effects on organic materials and corrosion of metals in this medium can be overcome, this reactor should be able to operate at a higher temperature and lower pressure than CANDU, and economies in capital cost can be expected. However, development of the concept will probably take a number of years.

A third type of power reactor is also under study: again the moderator is heavy water and the fuel uranium oxide, but in this case the reactor is cooled by high-pressure steam. The steam would be superheated in the reactor. New materials are required for this design too, and their development may be lengthy. Such a reactor would have a higher efficiency than CANDU and would be suitable for even larger sizes, possibly in combination with an organic liquid coolant. With the demand for electricity in Ontario currently growing at more than 200 megawatts capacity per year, these very high power reactors will fill a definite need by the time they are developed, and as much as 400 electrical megawatts from one reactor may be desirable.

Canadian Nuclear Reactors

(in operation, under construction or approved for construction)

Name	Location	Date of Start-up	Power	Use
Zero Energy Experimental Pile (ZEEP)	Chalk River, Ontario	1945	100 w	Lattice experiments
National Research Experimental (NRX)	Chalk River, Ontario	1947	40,000 kw	Research and isotope production
National Research Universal (NRU)	Chalk River, Ontario	1957	200,000 kw	Research and plutonium and isotope production
Pool Test Reactor (PTR)	Chalk River, Ontario	1957	100 w	Reactivity and absorption measurements
Toronto University Sub-Critical Reactor	Toronto, Ontario	1958	—	Research and teaching
McMaster Nuclear Reactor (MNR)	Hamilton, Ontario	1959	1,000 kw	Research
ZED-2	Chalk River, Ontario	1960	100 w	Lattice experiments
Canada-India Reactor (CIR)	Bombay, India	1960	40,000 kw	Research and isotope production
Nuclear Power Demonstration (NPD-2)	Rolphton, Ontario	1961	20,000 kw (electricity)	Power demonstration
Canadian Deuterium-Uranium (CANDU)	Douglas Point, Ontario	1964/65	200,000 kw (electricity)	Power

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Abbreviations

bbl.—barrel
 bu.—bushel
 cu. ft.—cubic feet
 cwt.—hundredweight
 ft. b.m.—feet board measure
 gal.—gallon
 hp.—horse-power
 kw.—kilowatt

lb.—pound
 M—thousand
 Mcf.—1,000 cubic feet (gas)
 mm—millimetre
 oz. t.—ounces troy
 p.c.—per cent
 sq. mi.—square miles
 kwh.—kilowatt hour

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