CANADA 1943

The Official Handbook of Present Conditions and Recent Progress

Courtesy, National Steel Car Corporation.

A PHASE OF CANADA'S WAR PRODUCTION

These formidable mammoth Lancaster Bombers as well as Mosquito Bombers, Hurricane Fighters, Catalina Amphibian Patrol Bombers, various kinds of tanks, Universal Carriers, large calibre guns and a wide variety of small arms are being produced in quantity in Canadian plants. *(See pp. 17 and 36 to 42.)*

The Peace Tower, Parliament Buildings, as it looked at Christmas, 1942.

CANADA 1943

The Official Handbook of Present Conditions and Recent Progress

Published by Authority of
THE HON. JAMES A. MACKINNON, M.P.
Minister of Trade and Commerce

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THE growth in popularity of this Handbook since the series was placed on an annual basis in 1930; its extensive use by official and semi-official bodies in regular and special editions; its distribution in large numbers at international exhibitions and in different parts of the world where Canada is officially represented; and its use, by special permission, in financial and commercial houses for distribution to their clients; all attest to the need that exists for a brief and attractive economic handbook of the Dominion.

The current reports of the Dominion Bureau of Statistics deal in great detail with the subjects of population, production, external and internal trade, transportation, education, etc., but they are intended mainly for those who are specially interested in particular phases of our national life. The *Canada Year Book*, which summarizes these and other official publications, is of too detailed a character for wide distribution. The present publication is the result of an effort to survey the current Canadian situation and especially the effect the War has had on Canadian economy—comprehensively but at the same time succinctly—in a popular and attractive form, and at a cost that makes possible its use on a general scale.

The Handbook is designed to serve two purposes. To those outside of Canada, it will give a balanced picture of the Canadian situation from the Atlantic to the Pacific and of our diversified resources and their systematic development. In Canada, itself, it will help to provide a basis of information for dealing with current problems.

Jas. A. MacKinnon

Minister of Trade and Commerce.

OTTAWA, February 1, 1943.

PREFATORY NOTE

This Handbook has been prepared and edited in the Year Book Division of the Dominion Bureau of Statistics from material that has, in the main, been obtained from the different Branches of the Bureau. In certain special fields information has been kindly contributed by other branches of the Government Service.

The Handbook is planned to cover the general economic situation in Canada, the weight of emphasis being placed from year to year on those aspects that are currently of most importance, since there is not space to deal adequately with all. A review of Canada's War Effort and Economic Conditions at the Close of 1942 precedes the chapter material. The special articles following this review deal with: (1) Canada's Industrial War Front, 1942, and (2) Power in Relation to Canadian War Production. The former was specially prepared for the Handbook in the Department of Munitions and Supply; the latter was contributed by V. Meek, Controller, Dominion Water and Power Bureau, Department of Mines and Resources.

S. A. CUDMORE,
Dominion Statistician.

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Canada's War Effort and Economic Conditions at the Close of 1942

The Rt. Hon. W. L. Mackenzie King, P.C., M.P., Prime Minister of Canada.

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The War Effort

On Sept. 10, 1939, His Majesty the King proclaimed the existence of a state of war between Canada and Germany. Parliament had been called into session when Germany attacked Poland, on Sept. 1, and the declaration of war approved by Parliament at the earliest possible moment.

The immediate steps to organize the war effort were taken under authority of the War Measures Act of 1914. The Militia, Naval Service, and Air Force were placed on active service, and certain other provisions were made for the defence of the coasts and for internal security. The "Defence of Canada Regulations" and other emergency regulations were brought into force and the censorship organization was established.

Several months of what might be termed the organizational phase of Canada's war activity followed. Immediate consideration was given to the most effective way in which Canada could make her maximum contribution to the War. Consultations were held with the Allied authorities and their views were learned. Representatives of the United Kingdom, Australia and New Zealand came to Canada at the suggestion of the United Kingdom, and conferred with the Canadian authorities on the establishment of the British Commonwealth Air Training Plan. The Agreement on the details of this Plan was signed on Dec. 17, 1939, by which time action had been taken to put it into effect. On the same day, the first contingent of the Canadian Army landed in Great Britain.

On the economic side, organization proceeded equally rapidly. The creation of an effective economic war organization was, from the outset, an essential part of the war effort. This is dealt with in detail at pp. 20 to 30.

In June, 1940, Parliament passed the National Resources Mobilization Act, authorizing the Governor in Council to require "persons to place themselves, their services and their property at the disposal of His Majesty in the right of Canada as may be deemed necessary or expedient for securing the public safety, the defence of Canada, the maintenance of public order, or the efficient prosecution of the War, or for maintaining supplies or services essential to the life of the community", with the exception that persons could not be compelled to serve in the Armed Forces outside of Canada and her territorial waters.

War was declared on Italy on June 10, 1940, when that country declared war on the United Kingdom and France. For Canada, the collapse of France and the German occupation of the small neutral countries of Western Europe was marked by redoubled efforts to strengthen the front lines of the Allied struggle against the Axis, and by increasing collaboration with the United States in all matters pertaining to defence and the production of war equipment.

The period following the fall of France was marked by notable developments in the relations between Canada and the United States. These developments, in turn, were an aspect of the growing co-operation of the United States with the British Commonwealth and the other countries engaged in hostilities with the Axis powers.

The outcome of the Ogdensburg Agreement of Aug. 17, 1940, was the establishment of the Canada-United States Permanent Joint Board on Defence. On Sept. 3, 1940, the exchange of destroyers for bases was agreed upon by the United States and Britain. As a result of this exchange the destroyer strength of the Royal Canadian Navy was doubled. The Lease-Lend Act was passed by the Congress of the United States on Mar. 11, 1941. The Hyde Park Declaration, embodying an Agreement between Canada and the United States to collaborate in the production of defence materials, was issued by the Prime Minister and President Roosevelt on Apr. 20, 1941. In furtherance of the Agreement reached at Hyde Park in April, Joint Production Committees were established by Canada and the United States on Nov. 5, 1941.

The steady growth of Canada's share in the defence of Britain was reflected in the visit, in August and September, 1941, of the Prime Minister to Britain. In the course of his visit, the Prime Minister attended a number of meetings of the War Cabinet of the United Kingdom, conferred informally with the Prime Minister of Great Britain and other members of the British Government, and inspected the Canadian Armed Forces.

Canada's relations with the other nations of the western hemisphere have been strengthened by the exchange of Ministers with the Argentine, Brazil and Chile, and by the visit to the countries of South America of a trade mission headed by the Canadian Minister of Trade and Commerce (August-October, 1941).

A Canadian High Commissioner to Newfoundland was appointed on July 31, 1941; and a Canadian consulate was established at the French island of St. Pierre in August.

The growing concern of Canada with the Far East was reflected in the establishment of a Chinese legation at Ottawa on Feb. 26, 1942. A Canadian Minister to China was appointed later in the year.

The Prime Minister announced in Parliament on June 15, 1942, an agreement with the U.S.S.R. for the establishment of direct diplomatic relations. Poland, Yugoslavia, Norway, Greece and Czechoslovakia have also established legations at Ottawa. A Canadian Minister to the Soviet Union and a Minister to the Allied Governments at London were appointed later in 1942. The Canadian Minister to the Allied Governments was also designated as representative of the Canadian Government to consult with the French National Committee at London on all matters of mutual interest relating to the conduct of the War.

On Sunday, Dec. 7, 1941, Japan delivered, without warning, what was obviously a carefully planned attack upon widely scattered territories and forces of the United

States and the British Commonwealth in the Pacific. The Canadian Government decided immediately to associate Canada with the United States and the United Kingdom in hostilities against Japan.

The open declaration of war on the United States by Germany and Italy four days later removed the remaining restrictions on United States co-operation with the British Commonwealth, Russia, China and the other Allied powers. Notable examples of this co-operation have been: the visits to this continent of the Prime Minister of the United Kingdom; the signing, on Jan. 1, 1942, of the agreement among the 26 United Nations; and, of particular interest to Canada, the meeting, in May, 1942, of the United Nations Air Training Conference at Ottawa.

The resistance ordered by the Government at Vichy to the landing in French North Africa of the military forces of the United Nations was accepted by the Canadian Government as proof that the authorities at Vichy no longer enjoyed any independent existence. Accordingly, on Nov. 9, 1942, the Government ceased to recognize the authorities at Vichy as the Government of France and the French Legation at Ottawa was closed.

The year 1942 has seen a vast expansion of the Armed Forces of Canada and a tremendous increase in Canadian war production. Two distinct aspects of the war effort have been developed simultaneously. On the one hand, Canada is raising, equipping and maintaining her own national Armed Forces for combat on land, at sea and in the air; on the other, Canada is helping, materially and financially, to feed and to arm Britain and other of the United Nations. All of these developments are outlined below.

The Navy.—Since the outbreak of war the Royal Canadian Navy has carried out unceasingly a three-fold task: guarding the coasts of Canada, escorting convoys, and taking aggressive action against the enemy wherever possible.

To meet the continually increasing demands upon its services, the Royal Canadian Navy has, during the past year, continued its expansion, both in personnel and in ships. In September, 1942, the number of officers and men totalled approximately

Their Majesties at the Dominion Day Service held in Westminster Abbey on July 1, 1942, commemorating the seventy-fifth anniversary of Confederation.

Courtesy, Royal Canadian Air Force

An Auxiliary Cruiser of the Royal Canadian Navy.—These ships, converted from luxury liners of peace-time, are doing their part in the protection of merchant shipping and in patrolling the coastlines of Canada.

Courtesy, Royal Canadian Navy

48,000, and in addition more than 1,000 officers and men are serving with ships of the Royal Navy. There were more than 400 ships flying the White Ensign under the command of the Royal Canadian Navy; this number included auxiliary cruisers, destroyers, corvettes, minesweepers, motor patrol-boats, motor torpedo-boats and auxiliary craft. On Oct. 21, 1942, the Naval College at Esquimalt was opened and, an entirely new departure, a Women's Royal Canadian Naval Service was established.

On May 20, 1942, the first destroyer-building program in Canada was instituted and the keels of two Tribal Class destroyers were laid at a Halifax shipyard. Four other Tribal Class destroyers, much larger and much more heavily armed than any previously in the Canadian Navy, have been launched at a British shipyard for the Royal Canadian Navy. They have been named after Canadian Indian tribes—*Huron*, *Athabascan*, *Iroquois* and *Haida*.

While the destroyer fleet is being added to, both at home and in the United Kingdom, Canadian shipyards are continuing to build the other ships of Canada's Navy, the corvettes and minesweepers, motor-launches and motor torpedo-boats.

The third year of the War was marked by the outbreak of hostilities in the Pacific, but despite the imposition of this extra responsibility, Canada's Navy has not relaxed its major operations in the Atlantic, where its ships work with those of the Royal Navy and the United States Navy. One-third of the escort work in the Atlantic is carried out by the Canadian Navy. Despite the extension of the enemy's submarine warfare to the coasts of North America and into Canadian waters (merchant ships have been sunk in the St. Lawrence River), the Atlantic life-line has been maintained and from the beginning of the War to October, 1942, more than 64,000,000

tons of cargo had been carried from Canada's shores across the Atlantic, and more than 11,000 ships had been convoyed. These figures do not include the troop transports, all of which had been convoyed without the loss of a ship.

The Navy has not been able to undertake these hazardous duties unscathed. Its losses in ships include three destroyers (*Fraser*, *Margaree* and *Ottawa*), three patrol ships (*Bras d'Or*, *Otter* and *Raccoon*), and four corvettes (*Lévis*, *Windflower*, *Spikenard* and *Charlottetown*). The casualty lists, too, show part of the price that Canada's Navy has paid; to Nov. 1, 676 were killed on active service, 92 wounded, 9 taken prisoner, and 75 dead of other causes.

Members of the Women's Royal Canadian Naval Service.

Courtesy, Royal Canadian Navy

In 1942 a Naval Board was created as an advisory body to the Minister. Corresponding to the British Board of Admiralty, it has five Naval Members and one Civil Member. The first Naval Board is composed of the Chief of Naval Staff, the Vice-Chief of Naval Staff; the Chief of Naval Personnel; the Chief of Naval Equipment and Supply; and the Chief of Naval Engineering and Construction. The Financial and Civil Member is the Acting Deputy Minister for Naval Service.

The Army.—In the early stages of the War, Canada's contribution was limited to the provision of: two divisions with necessary ancillary troops for service abroad, including the necessary reinforcements and training establishments to provide for these forces; guards at vulnerable points throughout Canada; and defence units on the East and West Coasts.

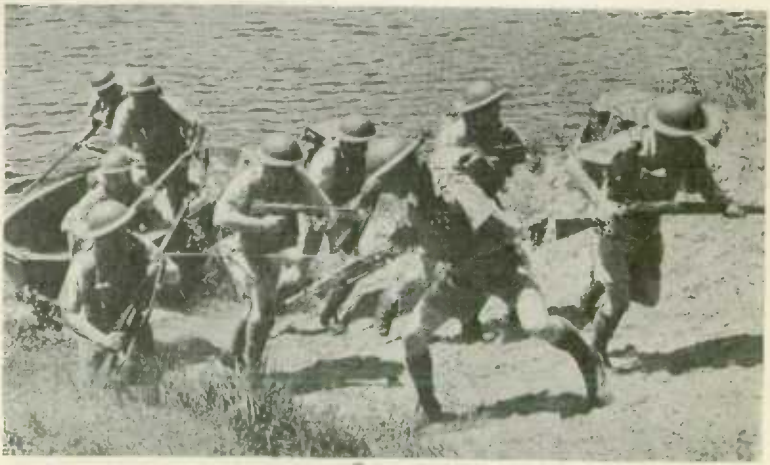
Besides serving in Britain, the Active Army has supplied troops for service in Iceland, Gibraltar and the West Indies, as well as the force sent to Hong Kong, which, after a valiant stand with the British garrison, was forced to surrender to overwhelming Japanese forces on Dec. 25, 1941.

By autumn, 1942, the Canadian forces overseas consisted of three Infantry Divisions, two Armoured Divisions, and an Army Tank Brigade, with thousands of army and corps troops. Another Army Tank Brigade was in training for overseas, so that Canada will soon have an army overseas consisting of two Army Corps. This Army will have a larger proportion of armoured troops than any army in the world. In addition to forces for overseas service, the Canadian Army has developed a full-time force for the defence of Canada itself, consisting of coastal defence units, comprising infantry, artillery, searchlight and signal units, together with three divisions in training, the members of which comprise both men enlisted for general service and recruits called up under the National Resources Mobilization Act. The Veterans' Guard, comprised of men who served in the First World War, undertakes the guarding of prisoners in internment camps and many other duties in

CANADA'S ARMY IN TRAINING

Canadian troops at manoeuvres, Overseas.

Courtesy, Wartime Information and Canadian Army



VARIOUS TYPES OF TANK-LANDING BARGES

Training with tank and universal-carrier carrying barges as used for the first time by Canadians in a combatant assault at Dieppe.

Courtesy, Canadian Motorist

Members of the Canadian Women's Army Corps Employed in Office Work, thus Releasing Able-bodied Men for the Fighting Forces.

Courtesy, Wartime Information

connection with internal security, and has a company in England for special duty at Canadian Headquarters besides other detachments on special duty elsewhere. In October, 1942, over 210,000 Canadian soldiers were overseas and over 160,000 were on full-time service in Canada. The high standard of training required of the modern soldier and the need for rapid training of large numbers of volunteers and recruits has brought about the creation of some 70 training centres and establishments capable of handling 200,000 soldiers a year.

The Canadian Women's Army Corps was formed in September, 1941, with the purpose of relieving physically fit men employed in administrative and non-combatant duties. By autumn, 1942, the strength of the Corps had increased to over 6,000.

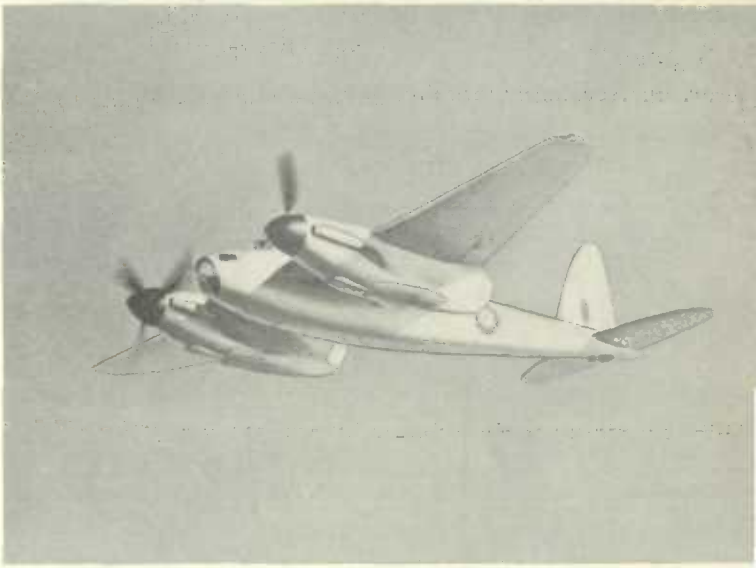
In addition to voluntary enlistments and recruits called for compulsory training, special emphasis has been placed upon the organization of a Reserve Army, membership in which does not preclude a man's continuing in his civil avocation. Persons eligible for enlistment in the Reserve Army include married men of 30 to 50 years of age, and single men of 17 to 19, and 40 to 50, as well as single men of 19 to 40 when not medically fit for the Active Army; certain persons exempted under the Act may also be enrolled in the Reserve Army.

The improvement in facilities for recruiting and training the Active Army, and the calling up of men for compulsory training, lessened the usefulness of the Reserve in its former function of a feeder to the Active Army. It has now been reorganized upon a purely home-defence basis and many of the units have been organized into brigade groups, with a longer period and higher standard of training than the remainder of the Reserve. Progress is being made towards the equipment of these brigade groups in a similar manner to the Active Army, so that they will constitute a comparatively mobile force, ready to reinforce the troops of either of the coastal commands in the event of attack. These brigade groups, when fully organized, will provide an auxiliary force roughly equivalent to three divisions.

The Air Force.—In previous editions of the Handbook, the organization of Canada's air strength during the early period of the War has been outlined. The present review is intended to bring that material up to date.

On Dec. 16, 1942, the British Commonwealth Air Training Plan marked its third anniversary, after another year of great expansion that makes the present vast training plan almost unrecognizable beside the original conception. The British Commonwealth Air Training Plan produces pilots, air observers, and air gunners for service in the Royal Canadian Air Force and the Royal Air Force. These are

A Huge Four-Motor Lancaster Bomber over Montreal.—There are four gun turrets—nose, mid-upper, mid-lower and tail—these give excellent defensive protection from all angles.



A DeHavilland "Mosquito" Bomber.—This is recognized as the world's fastest bomber-aeroplane. It is extremely manœuvrable and can be used in day or night operations.

A Catalina Amphibian.—This aeroplane is used chiefly on convoy work and submarine detection duty. The first such 'plane to be constructed in Canada made its maiden flight at Montreal on Dec. 4, 1942, and was christened the "Princess Alice".

Courtesy, Royal Canadian Air Force and Wartime Information

separate altogether from airmen already sent from Canada for service overseas by the Royal Canadian Air Force, which are a voluntary and entirely supplementary contribution and retain their identity as R.C.A.F. units.

The Plan is administered by Canada's Department of National Defence for Air, assisted by a Supervisory Board at Ottawa composed of three Canadian Cabinet Ministers, representatives of the other participating governments, the Deputy Minister of National Defence for Air and the Chief of the Air Staff.

As a result of the Agreement signed in December, 1939, whereby the Government of Canada was appointed administrator of the British Commonwealth Air Training Plan in Canada, an enormous expansion period in both personnel and material began. The original plan envisaged a training schedule which would reach a peak in the spring of 1942 and would involve the expenditure of $824,000,000, of which Canada's share was to be $600,000,000. At a conference in 1941 the partners to the B.C.A.T.P.—the United Kingdom, Australia, New Zealand and Canada—met to renew the agreement on terms that provide for greatly increased production of trained airerew. The new agreement—effective July 1, 1942—is operative until Mar. 31, 1945, during which time the estimated cost will be $1,500,000,000.

So far as the schedule of the original agreement was concerned, the Plan came into full operation with the opening of the last of nearly 100 training schools in December, 1941. Under the new agreement, however, there was to be considerable

Members of the Royal Canadian Air Force Women's Division on Parade. *Inset:* An airwoman working on an aeroplane engine—one of the essential jobs now being performed by women to release more men for flying operations.

Courtesy, Royal Canadian Air Force

The Rt. Hon. W. L. Mackenzie King, the Hon. C. G. Power, M.C., Minister of National Defence for Air, and the Hon. J. L. Ralston, Minister of National Defence, greeting an R.C.A.F. bomber crew who landed at Ottawa on the night of Sept. 2-3, 1942, a little less than twenty-two hours after they had dropped their bomb load on the German city of Saarbruecken.

Courtesy, Royal Canadian Air Force

expansion, not so much by the construction of new aerodromes as by the extension of existing facilities. The increase in man-power, essential to 'stepping up' production by the Plan, was to be met to a considerable extent by an increase in the number of men sent to Canada for training by the Royal Air Force. The R.A.F. was to provide approximately 40 p.c. of the men to be trained, the remaining 60 p.c. to be provided by Canada, New Zealand and Australia.

Another outcome of the agreement was that considerably more emphasis was to be placed on preserving the identity of the R.C.A.F. fighting forces overseas. There are now 25 R.C.A.F. squadrons, manned largely by Canadians, in operation. R.C.A.F. fighter and Army Co-operation squadrons took part in the intense air fighting during the Dieppe raid by Canadian troops in August, 1942, when it is estimated that 276 enemy 'planes were destroyed or damaged. Canadians, both in the R.C.A.F. and the R.A.F., continue to participate in heavy raids on Germany and, more recently, on Italy, and more than 2,000 Canadians stationed in the Middle East took part in the great drive against Rommel in the autumn of 1942. R.C.A.F. units are also based with United States air forces in Alaska and have participated in operations against the Japanese in that area.

At the same time Canada's air defences and the R.C.A.F. Home War Establishment have been considerably augmented on both coasts. More aerodromes have been constructed and more newer and faster aircraft provided. Long, gruelling hours, in bad weather and good, are spent by coastal and convoy patrols on essential and important duties.

The Economic Effort and Its Organization

Modern war requires the full and effective mobilization of the nation's economic resources to equip and supply the fighting forces and to maintain the civil population while as much as possible of the national effort is devoted to the prosecution of the War. For Canada this implies not only the provision of men and materials for the fighting forces but the furnishing of food, materials, munitions and equipment to Britain and other Allies. The demands for man-power are therefore urgent for the making of munitions and war supplies as well as for the Services—the Navy, the Army and the Air Force.

Fortunately, so far as financial organization is concerned, the Canadian financial structure was already well developed before the War to a point where it had proved its adaptability and suitability to the country's needs. The strain of war and Canada's accomplishment in meeting such a high proportion of the direct cost of the War, while at the same time providing Britain with very extensive financial assistance in obtaining war supplies in Canada, has been further evidence of this.

In the First World War, Canada's munitions output was limited to shells and rifles. Ships and aeroplanes, Bren guns, heavy machine guns, Browning guns, submachine guns, AA guns, anti-tank guns, trench mortars, 25-pounders, naval guns, tanks, universal carriers, etc., are but a few of the munitions now being supplied in quantity for use in almost every theatre of war. In 1942 Canada made an outright contribution of munitions and supplies to the value of $1,000,000,000 to the United Kingdom.

During the course of the War a serious exchange problem has developed in the form of a shortage of U.S. dollars resulting from the growing need of obtaining essential materials of war from that country. As indicated later, this has been met very effectively by the policies carried out by the Foreign Exchange Control Board (see below), and by the arrangements made under the Hyde Park Agreement.

The Financing of Canada's War Effort in 1942.—To meet the rapidly expanding expenditures of the Dominion, on behalf of Britain and the other Allies, further steep increases in taxes and a plan of compulsory savings were introduced in the Budget brought down on June 23, 1942. The principal tax increases were in excise duties and taxes (to yield $66,000,000 in a full year); personal income taxes ($115,000,000), which will now absorb the National Defence tax; and the excess profits tax ($58,000,000). (For details of the financial effort see pp. 169 to 175.)

War-Time Control of Foreign Exchange.—The outbreak of war created new and urgent problems in connection with Canada's financial relations with other countries. Control of foreign exchange and of all financial transactions between residents of Canada and residents of other countries was brought into operation six days after Canada declared war on Germany.

The Foreign Exchange Control Order, which came into effect on Sept. 16, 1939, set forth the basic law on the subject, and established the Foreign Exchange Control Board, responsible to the Minister of Finance, as an administrative body to exercise continuous control over transactions subject to the Order.

The Board, subject to the direction of the Minister of Finance, was entrusted with use of the Exchange Fund established by the Exchange Fund Act of 1935 and the amount of this fund was enlarged by $325,000,000 on Apr. 30, 1940, to enable the Board to acquire more foreign exchange; advances totalling $400,000,000 were made

to the Board in July, 1941, to enable it to continue accumulating sterling exchange and thereby to provide the British Government with Canadian dollars required for British purchases in Canada.

Each branch in Canada of the Canadian chartered banks is an authorized dealer and agent of the Board. Postmasters, also agents of the Board, have limited authority to sell foreign exchange. All foreign exchange received by residents of Canada must be sold to an authorized dealer or other agent. All such purchases and sales are made for the account of the Board at the official rates of exchange which the Board may prescribe, subject to instruction by the Minister.

It might be pointed out that, in addition to the actions and policies carried out by the Board, including the restriction of exports of capital from Canada and the restriction of the use of foreign exchange for pleasure travel, other measures have been taken by the Government to meet the shortage of exchange. The most important is the War Exchange Conservation Act, prohibiting or restricting the importation of specified non-essential goods, and providing means for the increasing of exports. The exchange shortage was also relieved in part by the agreements announced by the President of the United States and the Prime Minister of Canada at Hyde Park on Apr. 20, in accordance with which the United States will provide to the United Kingdom, under the Lease-Lend Act, American components of war supplies to be manufactured in Canada for Britain and, more significantly, the United States will buy from Canada certain essential materials and other war supplies that Canada can produce quickly and efficiently.

The Department of Munitions and Supply.—The Department was organized in order to centralize all purchasing functions on behalf of the Armed Forces, except for certain construction and like facilities, for which contracts continued to be let directly by other departments, such as Transport, National Defence and Public Works. The Minister is empowered to examine into and to organize, mobilize, and conserve the resources of Canada for the purpose of furnishing munitions of war and supplies.

The Department does all the essential purchasing for the Canadian Armed Forces, as well as for the British Commonwealth Air Training Plan, the United Kingdom Technical Mission, the British Admiralty Technical Mission, and the Governments of the other Allied Nations. Control over essential war materials has been effected by the appointment of 13 controllers of materials and services who are members of the Wartime Industries Control Board. The object of control is to assure adequate supplies to war industries, but the work of the Board is closely associated with that of the Wartime Prices and Trade Board, the latter Board having control of prices. Each controller administers the policy of the Wartime Prices and Trade Board as applied to the industry over which he exercises control.

The Metals Controller, for example, supervises the supply, distribution and use of all non-ferrous metals, minerals and alloys. The regulation of the use of steel is under the Steel Controller. The Motor Vehicle Controller has stopped the manufacture of passenger cars and light trucks and directs materials and labour to the manufacture of war vehicles.

The Oil Controller has restricted the civilian use of gasoline, while the Timber Controller administers the sale, storage and movement of timber. Measures have been taken by the Chemicals Controller to assure adequate supplies of chemicals for various essential purposes. The Transit Controller has undertaken the reorganization of transit systems to provide adequate transportation facilities in key industrial areas.

Such vital raw war materials as silk, rubber, cork, transparent film, refrigerators, washing machines, stoves, radios, vacuum cleaners, and other electrical equipment as well as many other goods have been brought under the jurisdiction of the Controller of Supplies. The Power Controller, on the other hand, is effecting the maximum production of power for war industry.

The Construction Controller is regulating construction, repair, remodelling, and installation projects involving private homes, churches, hospitals, schools, and all other types of housing (commercial, industrial, and institutional buildings) except those owned or financed by the Dominion Government. He also exercises control over the installation of machinery and equipment.

The Machine Tools Controller is increasing the supply of machine tools for the use of necessary Canadian war industries. Canadian ship-repair facilities are under the supervision of the Controller of Ship Repairs and Salvage and are being stepped up to a maximum to provide speedy handling of both naval and cargo vessels. The Aircraft Controller directs the manufacture of aircraft and aircraft parts.

The need to extend and create new industrial facilities in Canada for purposes of war production led to the development of an extensive program of capital assistance to industry by the Governments of Canada and the United Kingdom. The Department of Munitions and Supply has organized and administered this program, details of which are given at pp. 36 to 38.

The Department of National War Services.—The Department of National War Services was established by Act of Parliament in July, 1940, to assist in carrying out the provisions of the National Resources Mobilization Act, 1940, concerned with the mobilization of all the effective resources—both human and material—of the nation. The Department was also empowered to promote, organize and co-ordinate voluntary war services and to make the most effective use of existing services and of material contributions made for the prosecution of the War. As organized, it consists of the following Divisions: Mobilization Division; Voluntary and Auxiliary Services and War Charities Division; Salvage Division; The Canadian Travel Bureau; Division of Office Economies; and Corps of (Civilian) Canadian Fire Fighters.

Mobilization of Man-Power.—At its inception, the Department was charged with the direction and supervision of the National Registration. Under the National Resources Mobilization Act, the Department utilizes the National Registration records, and determines the men who will undergo military training; the number is based on the requirements, from time to time, of the Department of National Defence. The regulations are under the jurisdiction of administrative boards for each of the thirteen administrative divisions. The men are called for compulsory training in age classes and are subject to medical examination by one of the eight thousand appointed and duly licensed medical practitioners in Canada. Upon passing the required medical examination, the men are sent to the military training centres.

Voluntary and Auxiliary Services and War Charities.—The Voluntary and Auxiliary Services Division is charged with the development of voluntary projects and the enlistment and direction of all who desire to contribute services to the war effort. The provision of off-duty services to the men and women of the Armed Forces in the urban centres of Canada is a vital part of the general war program. The Department has established Citizens Committees in fifty Canadian cities in order that all war activities may be promoted and co-ordinated. Recommendations in respect to the granting of registration under the War Charities Act are made to the Department of National War Services by the Citizens Committees in order that the public may

be assured that funds collected are wisely and properly expended. The War Charities Division has now 2,900 registered funds to which the public subscribe, to provide war auxiliary services in Canada, comforts to the men overseas, and amenities to prisoners of war. Voluntary donations from the inception of the Act until Dec. 31, 1941, totalled $43,678,955.

National Salvage.—National Salvage, organized under the Department of National War Services, is constantly growing, with hundreds of voluntary committees in operation throughout Canada collecting much needed materials of all kinds in support of the Dominion's war effort. Large sums of money have been realized from the sale of this salvage, most of which has been donated to local war charities or for the benefit of troops in training.

The Canadian Travel Bureau.—Owing to war conditions and to foreign exchange control regulations, tourist travel to and from the United States is practically non-existent, and the Bureau has been reduced to a skeleton staff.

Office Economies.—A new Division was created in 1942 known as the Division of Office Economies. This Division is charged with the duty of effecting throughout all Government departments the greatest possible economy and saving.

The Corps of (Civilian) Canadian Fire Fighters for Service in the United Kingdom.—This Corps was authorized by Order in Council, Mar. 2, 1942, and was recruited in order to assist the National Fire Service in Great Britain in fighting fires and protecting life and property endangered by enemy action. Recruiting began on Mar. 16, 1942, and the Corps was brought up to full authorized strength by Sept. 16, 1942. The personnel were recruited from 105 municipalities across Canada, two-thirds of the strength being composed of trained fire fighters. The Corps is fully equipped, trained and officered by ranking fire fighters and is presently serving alongside its comrades in Great Britain.

Wartime Information Board.—The Wartime Information Board was created by Order in Council on Sept. 9, 1942, with the object of "ensuring an informed and intelligent understanding of the purposes and progress of the Canadian war effort". The function of the Board is to assist in providing Canadian war news and information in the United States and other countries as well as in Canada. The Board consists of a Chairman, a Vice-Chairman and eight members, the latter being representatives of the Ministers whose Departments are most closely connected with war news. The Board is related to the War Committee of the Cabinet and is responsible to the Prime Minister as President of the Privy Council.

The Board was assigned the information duties formerly in charge of the Department of National War Services and thus absorbed the previous Bureau of Public Information. Offices have been established at Ottawa, Washington and New York, and representatives are attached to the offices of the Canadian High Commissioners in the United Kingdom and Australia. The Board does not supersede or exercise authority over the information staffs of various Departments; it operates as an inter-departmental body to promote co-ordination of war news and information services.

The National Film Board.—The National Film Board, established by Act of Parliament in 1939, is composed of eight members, two cabinet ministers, three civil servants and three representative citizens. The functions of the Board are carried out under the direction of the Government Film Commissioner, who is responsible for co-ordinating and advising upon all film activities of the Canadian Government.

It produces or arranges for the production of films on behalf of all Government departments and divisions; these are distributed to approximately 840 theatres in English-speaking Canada and 60 theatres in French-speaking Canada. A wide distribution to theatres abroad is also made, including those in the United Kingdom, the United States, Australia, New Zealand, the Union of South Africa, the British West Indies and the countries of Central and South America. Non-theatrical distribution is arranged through the Central Government Distribution Service.

The Wartime Prices and Trade Board.—The Wartime Prices and Trade Board was constituted by Order in Council under the War Measures Act on Sept. 3, 1939, "to provide safeguards under war conditions against any undue enhancement in the prices of food, fuel and other necessaries of life, and to ensure an adequate supply and equitable distribution of such commodities". The Board was given extensive powers to investigate, to license manufacturers and dealers, to buy or sell and allocate supplies, to control imports or exports of any necessity of life, and to fix maximum prices or mark-ups.

The guiding principle of the Board's activities in controlling prices during the first two years was to organize supply and prevent the occurrence of avoidable shortages. The Board dealt with a wide range of commodities and, in the case of certain commodities that required detailed supervision in the organization of supplies, it appointed Administrators to whom extensive powers were delegated. Administrators were placed in charge of wool, sugar, hides and leather, coal, oils (animal, fish and vegetable) and rents. Under the Wool Administrator, all purchases of imported wools for both civil and military requirements were co-ordinated, and types of wool that were relatively scarce were allocated to Canadian mills on a priority basis. To meet Canadian requirements of sugar, the Sugar Administrator became the sole importer of sugar. In maintaining coal supplies, the Coal Administrator established a licensing system of all producers, importers and distributors, with periodic reports relating to the movement of coal. Under the Oils Administrator, Canada, within two years, became self-sufficient and even an exporter in respect of a number of important types of fish oils. In September, 1940, it was necessary to extend the Board's powers to cover housing rentals, and rents were pegged in a large number of communities where war-time conditions had resulted in serious congestion. During the first two years, the Board used its price-fixing powers on only four occasions and, of the four Orders, three were revoked as soon as the conditions provoking them had disappeared.

As the war program expanded, persistent shortages began to develop and as these shortages became more permanent, separate controls were set up in various Government departments to deal with them. In August, 1941, the powers of the Board were extended to cover all prices and services that were not already under the jurisdiction of the Controllers. In October, 1941, the Board placed severe restrictions on instalment purchases, at retail, of a long list of goods.

The imposition of an over-all price ceiling effective Dec. 1, 1941, required rapid extension of the administrative machinery. Many additional Administrators were appointed to control wholesale and retail trade and the whole range of commodities and services covered by the price ceiling, while Co-ordinators were named to supervise groups of commodities, such as textiles and clothing, foods, metals and paper products.

Administrators were given powers to investigate, to adjust manufacturers' and wholesalers' maximum prices consistent with maintaining the retail price ceiling,

and to control methods and modes of production and distribution of civilian supplies. To facilitate administration, 13 regional offices of the Board were established under which approximately 100 local offices have been set up. A Consumer Branch acts as a clearing house for problems arising out of price-control measures and affords consumers throughout Canada direct representation in Board operations. More recently the Board has set up more than 500 local ration boards to take care of problems that can best be dealt with locally.

Under a general licensing plan, machinery has been established for securing information necessary for the allocation of supplies in the event of shortages. Following the adoption of the price ceiling, a more extensive enforcement organization was established. Investigation of possible violations relating to prices, rentals, rationing or other Board regulations, are conducted through enforcement counsel attached to the Regional Offices. Headquarters are at Ottawa where general policy and matters of prosecution are decided.

The Department of Labour.—The most important developments in labour policy during 1942 have related to labour supply. As labour shortages became increasingly widespread and acute, earlier measures were steadily supplemented and replaced by more comprehensive ones. The process finally culminated in a complete Selective Service program designed to secure the most effective distribution of man-power both within industry and between industry and the Armed Forces.

The basic regulations are embodied in the National Selective Service Regulations which went into force on Sept. 1, 1942: under these the movement of workers from one job to another is closely supervised. The Wartime Prices and Trade Board has undertaken to curtail and eliminate non-essential civilian trade and industry in order to release man-power for the war program. The administration of the National War Services Regulations, under which men are called up for compulsory military service, has been transferred to the Department of Labour so that they may be co-ordinated with the rest of the Selective Service program, and the facilities of the employment service of the Unemployment Insurance Commission have been placed under the control of the Director of Selective Service for use in the administration of the program. (See Labour Chapter, pp. 130 to 144.)

Skilled workers are trained for industry and the Armed Forces under the War Emergency Training Program which developed during 1940 out of the peace-time Youth Training Program (see p. 142). By Sept. 30, 1942, 146,119 persons had received or were undergoing training in the various types of classes conducted under the war program.

The summary of labour policy in other fields which is made in *Canada 1942*, pp. xxiii-xxiv, is still substantially valid.

The National Labour Supply Council, however, has been abolished, and a Consultative Committee on Labour Matters has been set up to advise the Minister. The Committee consists of employers' and workers' panels which may be consulted either separately or jointly.

The policy regarding industrial relations has remained substantially unchanged during 1942, and so also has the fair-wages policy. The Order in Council of Oct. 24, 1941, regarding the stabilization of wages, was replaced by the Wartime Wages Control Order of July 10, 1942. The basic policy is unchanged, however, though the detailed provisions have been amplified and clarified. The National War Labour Board and the Regional War Labour Boards in the provinces continue to administer both the wages-control and fair-wages policies. Towards the end of 1942 the National

Board set forth a policy regarding the payment of women and inexperienced men who replace experienced male workers; the principle of "equal pay for equal work" was affirmed.

The Agricultural Supplies Board.—The Agricultural Supplies Board is a war-time control body operating under the Department of Agriculture. It is the responsibility of the Board and its collaborating provincial production committees to ensure that Canadian agriculture is conducted during war-time in a manner calculated to satisfy, so far as possible, the needs of Canada and the United Kingdom for food and fibres.

Another aspect of the supply problem presented itself with Japan's entry into the War in December, 1941, and the subsequent enlargement of the active war zone to the Southern Pacific and Indian Ocean areas. Not only did this bring problems connected with supplies needed in agriculture itself, but it brought as well requests for increased production in Canada of certain crops yielding oils which could be substituted for oils previously imported from these areas.

From the time of its establishment, the Agricultural Supplies Board has been interested in safeguarding certain commodities required for agricultural purposes.

Perhaps the most important work of the Board has had to do with working out production programs with Provincial Departments of Agriculture and farm organizations. These programs are designed to ensure supplies of farm products to meet the requirements of the civilian population in Canada, the Armed Forces, ships stores, etc., and to fill contracts entered into with the British Government and other members of the United Nations. Conferences for this purpose have been held at the beginning of each war year, while special conferences have been called from time to time to deal with specific problems. At the ninth Dominion-Provincial Conference, held at Ottawa in early December, 1942, representatives of Provincial Departments of Agriculture and of the Canadian Federation of Agriculture worked out with the Board and Dominion officials a complete agricultural program for 1943, setting objectives for increased supplies of meats, dairy products, eggs, the feed grains needed to support an expanded live-stock production, certain fruits and vegetables, and of oil-bearing seeds and other special crops to meet war-time requirements.

Through special sub-committees and the office of an Administrator, the Board assures supplies of fertilizers and pesticides needed in Canada; by Dominion-Provincial joint programs administered by a Seed Supply Committee, the Chairman of which is the Seeds Administrator, production is undertaken in suitable areas of those field root and vegetable garden seeds ordinarily supplied in large measure by Europe; through a Feeds Administrator, control is exercised over the live-stock feeds needed to ensure the production of the animal products called for in war contracts; by direct action, the Board ensures the production in Canada of the harvesting and processing equipment required by the fibre flax industry and, through a Flax Fibre Administrator, so controls the industry that desired quantities of fibre and tow are made available to the British Fibre Control and to the domestic market.

To prevent dislocations in the agricultural industry, the Board has endeavoured to assist those branches of agriculture that, through the disappearance under war conditions of normal export outlets, have become war casualties. A case in point is the apple industry, which, particularly in Nova Scotia and British Columbia, has been developed on an export basis.

Independent of the above Board, but working in close collaboration with it, are three Boards which purchase and forward supplies of Canadian farm products contracted for under agreements between the British Ministry of Food and the Canadian Government. The Bacon Board buys, stores, and ships 'wiltshires' and other pork products required by Britain, limiting, when necessary, supplies used in Canada in order to ensure that contract needs are met; the Dairy Products Board acts in a similar capacity with respect to Canadian cheddar cheese needed by the United Kingdom and takes such measures as will ensure needed supplies of other dairy products for Britain or for the domestic market; a Special Products Board, established in the spring of 1941, is responsible for purchasing and shipping to the United Kingdom certain Canadian farm products, such as eggs, fruit and vegetable products and flax fibre, which are not already being handled by the two Boards mentioned immediately above.

The Dominion Bureau of Statistics.—The great and many-sided expansion of Canadian statistics in numerous fields during the past twenty years, and the work that the Dominion Bureau of Statistics has done to provide a statistical background for economic study, have greatly facilitated the conversion from a peace economy to a war economy. Far more is known about production, internal trade, prices, the balance of international payments, etc., than during 1914-18, and this knowledge has been extensively used by the Government.

Co-operation with the Wartime Prices and Trade Board.—After the creation of the Wartime Prices and Trade Board, the Chief of the Internal Trade Branch of the Dominion Bureau of Statistics was seconded for duty thereto. He acted as liaison officer between the Board and the Bureau, the staff being supplied by the Board but organized by the Bureau. Statistics on coal were collected and compiled for the Coal Administrator. At the request of the Hides and Leather Administrator, a monthly series of statistics on stocks of hides, skins and leather was instituted. The work on prices has been expanded considerably, particularly as regards cost-of-living statistics, and extensive price records are furnished regularly to the Board at frequent intervals.

Under the Wartime Prices and Trade Board's order to license persons and firms selling or buying for resale, commodities and specified services, the Internal Trade Branch of the Bureau became the Records Division for this work. Over 330,000 businesses were licensed and have been coded by kind of business. A complete classification has been set up upon which basis orders, bulletins, posters, and circulars have been sent out. Results from this work have provided the Administrators with record lists of firms for use in their various administrations.

Co-operation with the Foreign Exchange Control Board.—The Internal Trade Branch of the Bureau also co-ordinates its work with that of the Foreign Exchange Control Board. Three officers of its staff are working on the premises of the Foreign Exchange Control Board and the Branch has co-operated in drawing up the forms and schedules used by the Board in its statistical work. As a result of the requirements of the Foreign Exchange Control Board, the work on tourist statistics has been reorganized.

Co-operation with the Unemployment Insurance Commission and the Department of Labour.—The Social Analysis and Economic Research Division of the Bureau of Statistics was detailed to collect, compile and tabulate statistics arising from the operations of the Unemployment Insurance Commission. The annual registration for

1942 was designed to yield additional data necessary for a "man-power inventory". This, when completed, will contain all basic information necessary for the optimum utilization of Canada's man-power. In April, 1942, the registration form was completed for all persons (whether insured or not) actively engaged in any firm employing insured personnel. A supplementary order of the Director of National Selective Service made necessary the registration of unemployed male persons. These man-power records have been compiled by the Bureau of Statistics: they include more than three million persons and such information as age, conjugal status, occupation, additional skills, industry and other pertinent data that will enable each to be placed in a position where he can contribute most to the national effort. In handling this work there has been the closest co-operation between the Bureau and the Man-power Records Branch of the Department of Labour.

The National Research Council.—The demands made upon the National Research Council for scientific and technical aid in war problems increased greatly in 1941. Since war broke out, the Council has directed its activities almost entirely to the support of the Armed Forces—the Army, the Navy and the Air Force. Close co-operation is being maintained between these fighting services, Departments of Government, industrial institutions, universities and research laboratories in regard to all scientific and technical experiments for war purposes. The Council is in reality the scientific research station of the three services named; it has been appointed as the official research station for the Royal Canadian Navy.

The Council has constructed prototypes of important tactical weapons that are now in extensive operation and use. Work in connection with secret radio gear and with naval protective devices has been very successful. Equipment and clothing used by the troops is rigorously inspected to ensure that the required high standards of quality are met. Studies are made on specifications, and advice given as required for the inspection and purchase of materials produced in Canada.

Newer activities of the laboratories arising from the War include: intensive study of radio problems; studies antecedent to the production of optical glass in Canada; development of gear and equipment for naval protective devices; work on ballistics; study of scientific and engineering problems involved in the storage of perishable foodstuffs and their transport to Great Britain; research on blood storage; preservation of food; and the study of nutrition problems. All research on methods of defence against chemical attack, except training phases, is carried on by a chemical warfare establishment committee, of which a member of the Council is chairman and technical officers of the Department of National Defence are members. This committee has organized and directed of the order of 100 research projects within the various university laboratories and in the Chemistry Division at Ottawa.

Liaison with the United Kingdom and other countries of the British Empire and with the United States has been established and maintained at a high level of efficiency through the interchange of staff and the exchange of information, both as to plans and results.

The Department of Pensions and National Health.—The ordinary peace-time duties of this Department have been turned into war channels to an increasing degree since the outbreak of hostilities. The Pensions Branch of the Department has been largely occupied with the treatment of members and discharged members of the Armed Forces, and with pensions. It has been necessary to construct additional accommodation in all the Departmental pensions hospitals; those Departmental hospitals previously utilized for immigration and quarantine purposes have

"Producing the Goods" in Canada.—These howitzer shells are produced in one of the largest plants of its kind in the British Empire and are included among the hundreds of different war materials now streaming across the sea from Canada.

Courtesy, Wartime Information

been adapted to provide active treatment for members of the Armed Forces or for civilian accommodation in the event of any emergency, and the total bed accommodation has been increased from less than 3,000 to over 8,000. The case of every member of the Forces discharged by reason of medical unfitness is reviewed by the Canadian Pension Commission. Rehabilitation plans for members of the Forces engaged in the present conflict are now in process of organization, under the direction of an Associate Deputy Minister of the Department especially appointed for the purpose. The rehabilitation program already enacted is much more comprehensive than that following the First World War. Because of conditions that were attached to the training program after that War, only 8 p.c. of the Forces benefited by vocational training and assistance in interrupted education. A further 4 p.c. were assisted in settlement upon the land. Thus, only 12 p.c. of the Forces then demobilized benefited by rehabilitation projects and the remaining 88 p.c. were given a war service gratuity. The newly enacted Post-Discharge Re-establishment Order enables the Department to furnish vocational training to all members, male and female, of the Forces, who need a skill or a brush-up course. Likewise, anyone who possesses the basic education can be assisted in university training. Social security and free medical treatment are also available for all for twelve months after discharge, subject to certain exceptions.

Most of the divisions of the Health Branch of the Department have also taken an active part in the war effort. The Division of Industrial Hygiene is specifically authorized to examine and recommend improvement in the working conditions and medical care of personnel in war industries. The work of the Nutrition Services is important in raising the standard of nutrition not only among the Armed Forces but among the general public of Canada, with a view to greater achievement in the war effort. Both of these services have proved most acceptable to industry. The Public Health Engineering Division has found its important peace-time duties of supervision of drinking- and culinary-water supplies and sanitation greatly increased in relation to the movement of troops and the establishment of new training grounds. The Laboratory of Hygiene undertakes, standardizes and controls

the manufacture of biological products for use by the Armed Forces; under the supervision of the Kamloops Division, watch is being kept on the rat population on the seaboards as well as the invasion of disease-carrying rodents in various parts of the Western Provinces. The vigilance of the Food and Drugs Division is directed towards the maintenance or adjustment of the standards of foodstuffs to meet war-time requirements, particularly with regard to those constituents that came from countries where trade relations are difficult if not impossible. The Quarantine and Sick Mariners' Division now treats members of the Merchant Marine who are taken ill while awaiting convoy and provides for the institutional retention of those in Canada who are too sick to continue service and who are citizens of countries occupied by the enemy.

Other Agencies and Activities.—There are various other special agencies performing important economic functions, either of control or investigation. The Canadian Shipping Board controls the use of both lake and ocean ships of Canadian registry. In allocating ships to particular routes and in seeing that essential cargoes are carried, it co-operates with the United Kingdom Ministry of War Transport and the United States Maritime Commission. The Shipping Priorities Committee determines the degree of urgency or priority of the various shipping requirements, gives direction to the Shipping Board, and forwards necessary requests for the use of United Kingdom and United States ships.

Since the Hyde Park Declaration, joint committees have been set up to co-ordinate the war programs of the United States and Canada on the economic side. The Joint Materials Co-ordinating Committee, linking the War Production Board and the Department of Munitions and Supply, is concerned with joint plans for the production, acquisition and use of scarce basic materials. The Joint Committee on Defence Production surveys the plant capacities in each country for the production of complete war equipment and supplies and recommends such modifications in allotment and specifications as will increase the total effectiveness of the program. The Joint Economic Committees, with which the other joint committees maintain continuous liaison, have an over-riding responsibility to investigate and report on joint war-time economic problems not being currently studied by other agencies. They are further charged with the duty of studying joint economic problems of post-war adjustment.

More recently, the problems of co-ordination, both internal and international, in the field of export policy have become more important because of the growing scarcity of essential materials.

In order to keep essential supplies from reaching enemy hands, control is exercised over exports from Canada through a special branch of the Department of Trade and Commerce. The Trading with the Enemy Regulations, administered by the Custodian of Enemy Property, prevent the enemy from deriving any benefit whatsoever from trade.

There have also been two important committees appointed to investigate and report to the Government on specific or general economic questions from time to time: the Advisory Committee on Economic Policy established in September, 1939, and made up of senior Government officials and advisers; and the Wartime Requirements Board, established in November, 1940, to secure information and to "formulate such plan or plans as may be necessary to ensure that war needs in the order of their importance shall have priority over all other needs" and to report upon other matters referred to it by the War Committee of the Cabinet.

Economic Developments in Canada 1942

Hon. James A. MacKinnon, M.P., Minister of Trade and Commerce.

The year 1942 has been marked by revolutionary changes in many directions on the economic front. Among the most striking have been fundamental disturbances in the national economic structure that have resulted in the rigid curtailment of individual freedom; these have been willingly accepted as part of the price of victory.

The incidence of prices control, the freezing of wages and salaries, rationing, Government participation in and subsidizing of essential industry, the fixing of priorities and the drastic reduction in domestic consumption of less essential products, though they have not had their beginnings in 1942, have been applied more vigorously in the year just passed: they have been instituted with one main object, viz., to enable Canada to take a most effective part in the winning of the present struggle.

The salient economic developments of 1942 may be conveniently summarized under the headings of: External Trade, Internal Trade, Manufacturing, and Primary Production.

External Trade

The salient feature of Canada's external trade during the war years, and especially marked in 1942, has been the vastly increased volume of munitions and foodstuffs passing through trade channels to the United Kingdom.

For 1940, total exports of domestic produce increased by $254,000,000 compared with 1939, whereas from 1940 to 1941 they increased by $443,000,000 and for the ten months ended Oct. 31, 1942, they had already reached $1,890,000,000, which was about $270,000,000 over the total for the whole of 1941. This upward trend is still in progress and it is now clear that for the full year 1942 aggregate trade will exceed $4,000,000,000 as compared with $1,687,000,000 in 1939.

Canada's external trade has always been predominantly with the United Kingdom and the United States. In the pre-war year 1938, 75·1 p.c. of the Dominion's exports of domestic products went to these two countries— 37·2 p.c. to the former and 37·9 p.c. to the latter: the total percentage of imports was 80·3 (17·6 p.c. from the United Kingdom and 62·7 p.c. from the United States). The War has not changed these main channels of trade but has deepened them considerably and has changed in a very pronounced way the nature of the commodities being traded.

Canada is now one of the main arsenals of democracy and the reflection in trade returns of the war contracts let from July, 1939, to July, 1942, valued at approximately $5,000,000,000 is just becoming apparent, for it takes a considerable

time to carry contracts from the blueprint stage to the actual exportation of the goods. It is estimated that 70 p.c. of the munitions and war supplies produced in 1942 have been placed at the disposal of the Allied Powers, 50 p.c. having been consigned to British theatres of war and Russia, and 20 p.c. to the United States and Pacific battle zones.

The demands the War has made upon Canadian agriculture to meet Britain's great need for foodstuffs is the other main direction of war-time trade. In addition to wheat, wheat flour and oatmeal, of which shipments from Jan. 1, 1940, to Oct. 31, 1942, increased by 55 p.c., 115 p.c. and 26 p.c., respectively, compared with the three pre-war years 1937, 1938 and 1939, there were shipments of other foodstuffs to the immense total of 2,000,000,000 lb. Among these were: bacon and other pork products, which showed an increase of 124 p.c. over the same period; cheese, an increase of 27 p.c.; eggs, no less than 670 p.c.; honey, 89 p.c.; canned fish, 209 p.c.; and large quantities of concentrated milk, tomatoes and other canned goods.

Internal Trade

The impact of various Government war-time control systems on all branches of internal trade has been sharper and much more direct than on external trade. Internal trade is broad and complicated in its ramifications: encompasses all agencies and services connected with storage distribution and the sale of goods, as well as professional and personal services.

Of all these agencies and services, finance plays a leading role. It is in truth the balance wheel of the entire economy. The well-thought-out financial policy of the Government has been to gear up the economic machine gradually. Heavy taxation and the flotation of large public war loans would have had a repressive effect before production was fully under way and these were therefore postponed until unemployment had been absorbed and the industrial slack taken up. The policy adopted was to give the consumer every opportunity to enhance his position and in the early stages an easy-money program was purposely followed. The year 1942, however, has marked the definite turnover to a policy of diverting as much of the national income as possible by income tax and compulsory or voluntary savings.

The national income has risen from $4,600,000,000 in 1939 to $7,500,000,000 in 1942. For the fiscal year 1940 total revenues from taxation were $468,000,000, in 1941 they were $778,000,000 and in 1942 (fiscal year), $1,361,000,000—for the succeeding seven months, April to October, 1942, they amounted to $1,212,000,000. New cash received from the public in the form of subscriptions to war loans has been: (calendar years), 1940, $400,000,000; 1941, $730,000,000; 1942, $1,828,000,000; and in addition, war savings certificates to the face values of $26,000,000 and $84,000,000 for 1940 and 1941, respectively, and $69,000,000 for the period January to October, 1942, have been contributed. Thus, in 1942, a total of approximately $4,000,000,000 was diverted from the national income and to that extent prevented competition with war-time industry in the purchase of materials in the open market. It should be observed that, even in the face of this large deduction, there was still a marked gain in purchasing power in the hands of the public compared with pre-war years: the remainder of the national income is more evenly distributed over the entire population and there is a far less concentration of capital in private enterprise. This fact has had an effect on the prices-control machinery.

Perhaps the most significant new influence brought to bear on the organization of internal trade during 1942 was the 'all-over' price ceiling. This was made

effective on Dec. 1, 1941, at a time when the Dominion was devoting about 44 p.c. of her production to the war effort. For twelve months, therefore, the internal economy has been subjected to a prices control that jumped over-night from control of a few basic goods to a comprehensive ceiling structure for all prices. It is no doubt too early to speak convincingly of the permanent nature of the results achieved for, as the Chairman of the Prices Board has pointed out, optimistic predictions would be false and unrealistic in view of the tremendous pressures that have developed on every side. Nevertheless, to confine ourselves to actual achievement, a large measure of success has been recorded. During 1940 and 1941 the total index of the cost of living rose by about 15 p.c. and as 1941 closed it was displaying a strong tendency to move forward at an even more accelerated rate; inflation had, in fact, become a serious threat. For the first nine months of the establishment of the over-all ceiling, the increase was 2·4 p.c. additional, but 0·7 p.c. of this took place in the last month—for the most part in the important foods group. No doubt this accounted to some extent for the warning of the Prices Board and, to more effectively control the cost of living, significant changes of policy were recently introduced into the price-ceiling set-up. As announced by the Minister of Finance on Dec. 3, 1942, an endeavour to keep the cost of living down to the level of Nov. 1, 1942, through tax remissions and subsidy payments to be passed on to the consumer was decided upon as a fairer way of adjustment than by increasing the cost-of-living bonus then prevailing.

The increasing concentration of economic strength in the war effort is now clearly reflected in the limitations on the quantities and kinds of goods and services that are available to consumers. Retail trade, especially all branches of non-essential trade, is feeling the effects of these limitations. Drastic adjustments, with many war casualties, have resulted.

Canada's transportation facilities are face to face with the enormous task of moving the Armed Forces and vast quantities of munitions and supplies, as well as normal traffic. In the first nine months of 1942 ton-miles increased 93 p.c. over the same period of 1939, while tonnage increased 76 p.c.; these figures both show extra loadings and the longer hauls that are now the rule. Passengers carried increased 122 p.c. over the same period of 1939 and passenger mileage increased 166 p.c. The goods moved in 1942 were for the most part of a heavy nature and were moved over long distances.

The curtailment of highway transport facilities has been very severe because of gasoline rationing and rubber shortage, and the pressure on manufacturers of motor-vehicles to produce for military needs. The Transit Controller ordered on Nov. 15, 1942, that, without official approval, no passengers were to be carried by motor-bus for a distance greater than 50 miles in any one direction or 100 miles return. The transportation of freight by private motor-truck was also limited from Nov. 30 to distances within a radius of 35 miles of the owner's place of residence, and has prevented empty return trips that result from 'cross hauling'—the cause of much wastage.

Manufacturing and Employment

The vast shift of industry from a peace-time to a war-time basis has been accompanied by an even greater dislocation in industry than has been the case with the agencies of internal trade. It was in the second phase of the War, beginning about

the middle of 1940, that Canada inaugurated a vast program of war-plant construction. (See pp. 36 to 38.) The Government has entered the industrial field in earnest but not in competition with private interests. The work is centralized in the Department of Munitions and Supply, which has enlisted the services of many industrial leaders and the co-operation of others in the gigantic task of organization and administration. Private industry has also financed war-expansion programs on a wide scale.

It is officially estimated that in 1942 Canadian war industry has produced goods to the value of $2,600,000,000 compared with $1,200,000,000 in 1941. For 1943, by such re-adjustments and increases as can still be achieved, the figure of $3,700,000,000 is forecast. This will mark the peak of Canada's production effort and will only be possible of attainment by the utmost organization of our equipment and man-power resources.

In the field of mechanical transport, production was almost doubled in 1942 compared with 1941; aircraft production increased by over 150 p.c., and reached several hundred 'planes each month; 50 10,000-ton cargo ships were put into service in the first nine months of 1942 and one million tons of merchant shipping, in addition to between 200 and 300 naval craft, are scheduled to be completed during the fiscal year ended March, 1943. Greatly increased quantities of tanks, guns, ammunition and all manner of war supplies were turned out by Canadian plants. The extent to which manufacturing facilities have been extended is indicated by the necessity for the conservation of all possible electric power and its diversion to war industry in the industrial areas of Ontario and Quebec.

At the beginning of 1942 over one million more men and women were gainfully employed than at the outbreak of the War. Employment has shown a further gain during the year, but for reasons given above and because of the absorption of personnel in the Armed Forces, the gain was on a reduced scale. At Sept. 1, 1939, the index of employment for manufacturing industries, as aside from all industries, stood at 115·3; at Sept. 1, 1940, it had risen to 138·4 or by 20·0 p.c.; a year later a further increase of 31·0 p.c. was recorded; and on Sept. 1, 1942, the index stood at 215·6 showing a further 19·0 p.c. rise. The labour force has become increasingly concentrated in war manufacturing plants and especially in heavy industry.

Primary Production

The pressing needs of the United Kingdom for foodstuffs after many of the former sources of supply had been cut off by the War and the tremendous demands of the Allies for raw materials, especially metals and lumber, apart altogether from the immediate needs of manufacturers of munitions and supplies at home, have had a strongly stimulating effect on all primary production.

As regards agriculture, the farmers working under the disadvantage of a scarcity of labour harvested all-time maximum crops in 1942. The production of wheat at 608,000,000 bu. on top of the heavy carryover has created problems of storage. About 1,350,000,000 lb. of bacon and pork products have been shipped to Britain since the War began, 300,000,000 lb. of cheese, nearly 94,000,000 cans of evaporated milk and 70,000,000 doz. eggs, in addition to a wide variety of fruits, vegetables, honey, fish, etc. All commitments to Britain, including the undertaking to supply 600,000,000 lb. of bacon and pork in the year ended October, 1942, have been completed and undertakings to supply 675,000,000 lb. of pork and 125,000,000 lb. of cheese in the current period have been made.

Canadian mines have, for the duration of the War, undertaken to sell to Great Britain all the copper, lead and zinc produced over and above Canadian requirements and production of all these metals has been at capacity levels for some time. Supplies have been brought under direct control because of the insatiable war demands. So tight has the situation become that copper and brass have, as from Dec. 4, 1942, been placed under direct allocation. The Metals Controller requires that sales of 300 lb. or more of these metals must have official approval.

Labour shortages have directly affected forestry operations. Operations in the woods have not kept pace with other primary production groups owing largely to the curtailment of forest operations for the pulp and paper mills, the output of which has been restricted in order to conserve electricity for more direct war needs. Lumber, however, is in greater demand than ever, both on its own account and as a substitute for metals, and the Timber Controller has appealed to lumbermen across the Dominion to produce to the maximum.

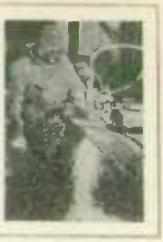
In November, 1942, the season's canned salmon pack was reported at 1,786,000 cases, which was 451,000 cases less than at November, 1941, but of this the sockeye pack was 665,000 cases—one-third greater than in 1941. The United Kingdom had at Nov. 1, 1942, already received more salmon from Canada than in the whole of 1941. Herring shipments to Britain have been less than in 1941, but the Dominion is setting aside as large a part of the catch as possible for the British consumer. The fishing industry has been handicapped in 1942 by the calls upon its man-power as well as by the loss of some of its best vessels requisitioned by the Department of National Defence.

To sum up, the striking feature of the war-time organization of the Canadian economy has been its diminishing dependence on the peace-time mechanism of prices and profits and the increased stress placed on voluntary co-operation and compulsion.

The change-over has not been sudden and during 1942 the emphasis has not been on new developments (although these, as indicated above, have been numerous) so much as on the more rigid and intensive application of powers and controls formerly provided for but held in abeyance or not completely developed. This trend will be emphasized more and more until final victory is achieved.

While Canada, as a nation, is straining every sinew to play a worth-while part in winning this victory, the problems that will have to be faced in the post-war period are not being ignored. Thus, Canada and the United States have worked out an agreement, made public on Dec. 1, 1942, by which the two countries agree to co-operate in plans for post-war economic settlements along the lines laid down in the Atlantic Charter of August, 1941. The program is open to all other countries that choose to co-operate and is to be directed to: (1) the expansion of production, employment, and the exchange and consumption of goods on an international scale for the common good; (2) the elimination of all forms of discriminatory treatment in international commerce and the reduction of tariffs and trade barriers.

CANADA'S INDUSTRIAL WAR FRONT, 1942



Starting almost from scratch, Canada, within three years, has developed a munitions industry that is not only meeting the needs of its own Armed Forces but is also sending immense supplies of war goods to all the United Nations.

Canadian munitions are being employed by the Chinese and by the Russians: they are being used in the Near East and in the Far East. They are being employed by that masterhand of production, the United States, and, above all, they are going to Britain where their weight is manifesting itself in the struggle against the Axis forces.

Canada was producing virtually no war materials when hostilities broke out in September, 1939. During 1940, large peace-time industries were converted to war production and ambitious plans for expansion were formulated. Some industries, indeed, prepared themselves for war production without waiting for a direct request from the Government and with no assurance that their facilities would be utilized.

Then came the fall of France, and Canada's war industry was whipped into a break-neck gallop. Great Britain was facing the German onslaught alone. Canada heard the British Prime Minister's call for "tools" and rushed the construction of plants and factories, the gathering of war supplies, and the re-direction of the nation's entire economic life.

In 1940, Canada began a vast program of war-plant construction. Where private industries were unable to finance their own expansion, the Government built extensions and bought the necessary machinery. Where large production schedules and other needs could not be met by private industry, the Government created companies wholly owned by the Crown to provide the necessary plants and to meet other needs. Of the 24 Crown companies incorporated, a number were organized not only to meet production problems, but also to surmount certain supply, purchasing and administrative problems. These Crown companies are playing their part in the tremendous expansion of Canadian industry to the point where it is now a potent and major source of arms for the entire Commonwealth, and indeed for the United Nations.

Private interests, on the other hand, in many instances financed their own plant extensions, with or without an allowance for amortization, or built plants, writing off such expenditures through depreciation. Such deductible amounts are determined by a Government board created for this purpose—the War Contracts Depreciation Board.

In the two years since the fall of France, the Government alone has created and now owns plants and other productive facilities to a value approximating six times the capital employed in the pre-war primary iron and steel industries. Or, putting it another way, the munitions industry now owned by the Crown is about four times as great as the entire pre-war chemical and allied products industry. At the end of March, 1940, the Canadian Government was administering capital

commitments of approximately $30,000,000 for plant expansion. By Sept. 30, 1942, commitments for the creation of productive facilities as applied in Canada totalled $780,000,000.

During 1940 and the early part of 1941, United Kingdom commitments in Canada were substantially larger than Canadian, but the Canadian share of total commitments has been increasing and is now well over 50 p.c. of the total. The largest proportion of these commitments has been expended and the new Government plants are now in operation.

To-day, at the end of 1942, plant capacity is approaching the limits of the nation's capacity to produce raw materials. The mines and forests are yielding record quantities of metals, minerals and lumber and, having passed its major construction stages, Canada is now reaching peak production.

The demand for war supplies in the present conflict is so great that production no sooner catches up with them than new needs and demands arise—greater than the first. Over-night, production programs are altered to answer changing war needs or to supply new theatres of war. To meet any contingency that may arise, the nation's economic and industrial experts have been recruited by the Government in unprecedented numbers.

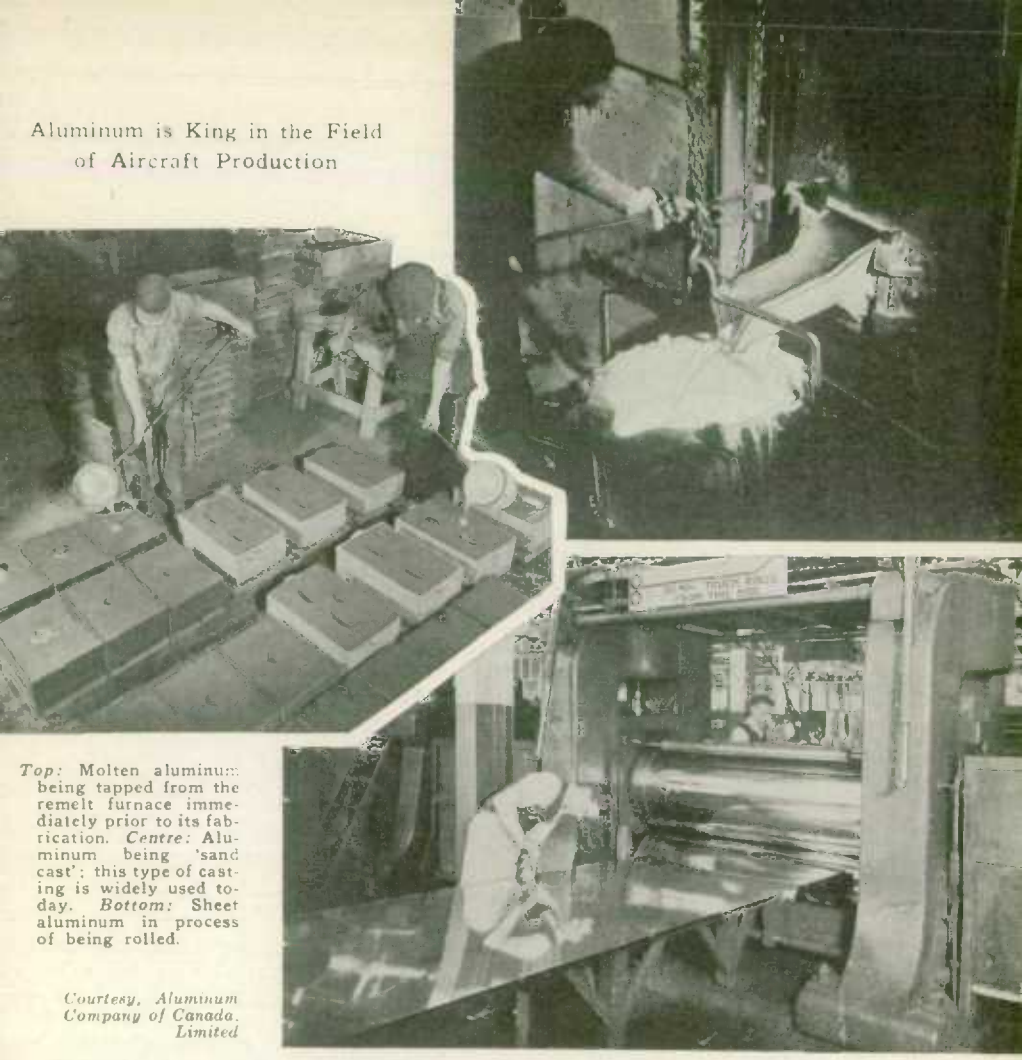
Thousands of Canadian plants have been converted to war production. Many of these factories are turning out war goods which, to some extent, are similar to their normal product. There are some plants whose facilities do not lend themselves to war-time production and these have had their operations curtailed. On the other hand, there are many instances where plants are producing articles far removed from the character of their normal production. Locomotive works are making tanks; street-car and bus builders are producing aircraft and other war materials; manufacturers of agricultural implements are turning out a wide variety of weapons, ranging from shells to aircraft. Similarly, firms engaged in the production of washing machines, sewing machines, and vacuum cleaners are making shell components, fuses, machine-gun magazines, and other products.

Large companies, working on orders for tanks, guns, 'planes or ships, have speeded up their own output by parcelling out sub-contracts to smaller firms for

Canada's Peace-Time Plants are put to War-Time Uses.—A large electrical company is now turning out coastal defence searchlights of 800,000,000 candlelight power each.

Courtesy, Wartime Information

Aluminum is King in the Field of Aircraft Production



Top: Molten aluminum being tapped from the remelt furnace immediately prior to its fabrication. *Centre:* Aluminum being 'sand cast': this type of casting is widely used today. *Bottom:* Sheet aluminum in process of being rolled.

Courtesy, Aluminum Company of Canada, Limited

various component parts. Sorel Industries, for example, is producing 25-pounder guns but, of the 1,286 component parts required for this weapon, almost half are being made by sub-contractors. Parts sub-contracted are handled by shops, ranging from a two-car private garage, with about $4,000 worth of machinery and operated by the owner and two helpers, to a modern shop with $300,000 worth of machinery and 600 employees.

From its inception, the Department of Munitions and Supply has consistently encouraged and aided prime contractors to place sub-contracts for component parts. A sub-contract division was set up in August, 1941, to intensify these efforts. Thus the Department has a knowledge of the facilities available in all plants scattered across the country and suggests suitable sub-contractors to prime contractors, as well as additional productive sources to its various production and purchasing branches.

Nearly one million persons are now engaged directly or indirectly in war production. Since the beginning of 1942, about 28,000 individuals have each month been absorbed into industry.

The result of the gigantic war-time mobilization of industry is seen in the thousands of ships, tanks, guns and 'planes that are now pouring out of Canadian plants and shipyards.

Shipbuilding.—The most extensive ship-construction program ever undertaken by the Dominion has now climbed to a point where total orders approximate $1,000,000,000. Since the War began, substantially more than 300 combat ships and more than 1,000 smaller boats have been launched. Work is proceeding satisfactorily on the construction of more than 1,500 other naval units, including Tribal class destroyers, corvettes, minesweepers and fast patrol boats.

With a 10,000-ton cargo vessel sliding down the ways every third day, the merchant-ship program, administered by Wartime Merchant Shipping Limited, envisages the building of nearly 300 vessels at an estimated cost of $600,000,000. Powered by made-in-Canada reciprocating engines and Scotch marine boilers, they are 10,000-ton deadweight and the manufacture of each vessel requires over a mile of steel ship plate. Included in the program are 18 vessels of 4,700 tons.

Orders for the construction of a variety of small craft amount to $15,000,000. Since the beginning of the War, 1,200 of these smaller craft have been delivered, while 1,600 are at present under construction or under contract.

Canada to-day boasts 21 major shipyards and 58 smaller boatyards. To feed all these yards, more than 500 industries all across Canada are engaged in the manufacture of components.

Under the direction of a Controller of Ship Repairs and Salvage, extensive facilities for ship repairs have been provided at a cost substantially in excess of $6,000,000. Naval and merchant vessels damaged by enemy action or other cause can now put into Canadian ports for repair.

Aircraft.—No less impressive has been the record of Canada's aircraft industry. More than 75,000 Canadian workmen and technicians, including a large number of girls, are at work on aircraft. Current production runs to several hundred 'planes a month. Canada now provides not only all the 'planes required for the vast Commonwealth Air Training Plan and most of the service 'planes needed for the defence of Canada, but is building an impressive array of first-line combat 'planes for both Great Britain and the United States.

To simplify and speed up the output, the manufacture of aircraft in Canada is now confined to 9 types as compared with the 15 types which, at one time or another, have been in production. These 9 types are: an elementary trainer, the Fairchild Cornell; a single-engined advance trainer, the North American Harvard; a twin-engined advance trainer, the Canadian Anson; a twin-engined reconnaissance bomber and bombing and gunner trainer, the Bristol Bolingbroke; a Naval patrol bomber, the PBY-5-A Catalina amphibian; a new twin-engined bomber, the DeHavilland Mosquito a four-engined long-range bomber, the Lancaster; a navy dive bomber, the Curtiss; and a single-engined transport, the Noorduyn Norseman. The contract for the Curtiss navy dive bomber was awarded in January, 1942. Involving an expenditure of $96,000,000, the order calls for the manufacture of 1,000 'planes.

Judged by civilian standards, one of Canada's biggest businesses of to-day is the repair and overhaul of aircraft and engines. This work is being carried out by the Department of Munitions and Supply in 29 plants, strategically located across Canada. Many thousands of aircraft are taken down and thoroughly overhauled annually.

Automobiles and Trucks.—The Canadian automobile industry has played a great part in equipping the armed forces of the Empire. Some 400,000 vehicles have been produced in Canada and shipped abroad for service in every campaign in which Empire forces have participated. In addition, bicycles, buses, tires, spare parts and other items are being produced for war purposes in large quantities.

Indeed the Canadian automobile industry, which now employs upwards of 30,000 men, is building more than 100 kinds of military vehicles, including 21 types of workshops, 5 types of wireless trucks, 3 types of ambulances, 3 types of fire trucks, scout cars, reconnaissance cars, armoured cars, and 90 types of troop and ammunition transports, artillery tractors and trailers. Manufacturers, who once concentrated their efforts on civilian needs, are now turning out infantry tanks, cruiser tanks and universal carriers, and each month sees an acceleration of their output.

The universal carrier is in essence a baby tank. This efficient little machine travels at speeds of 45 miles an hour on caterpillar tracks. It manoeuvres with ease on almost any terrain and is equipped with machine guns. A single Canadian plant turns out enough of these carriers in a day to equip a battalion, or enough in 14 days to equip an infantry division.

The 2 types of tanks Canada is producing are the Ram and the Valentine.* The Valentine is being shipped to Russia in quantities. It is a medium light tank, officially rated at 18 tons and is diesel motored. The body is armour plate, riveted and bolted, and the rotating turret may be operated either by hand or by electric control. In reality, it is a giant mechanical ferret, capable of burrowing its way through a brick building. As big as a living-room in an ordinary house, it is able to travel at nearly 20 miles an hour, climb steep ascents, ford streams, and rip through barbed-wire entanglements, or any ordinary defence works. There are more than 40,000 parts, exclusive of armaments, in a single Canadian-built infantry tank.

Nearly 20 feet in length, the Ram weighs more than a railway freight car. It can proceed, lightly and quietly, over all kinds of terrain from swamps to rocky and irregular ground. Its engine, which develops as much horse-power as several large, modern automobiles together, is capable of propelling its great bulk over obstacles and up steep hills. It is heavily armed, and has great offensive power.

Guns and Munitions.—Before 1939, except for the Ross rifle, the manufacture of guns was virtually unknown to Canada. To-day, Canada is not only a leading producer of guns but is producing them at costs comparing favourably with those of any country. Some of the guns and munitions now being produced in Canada are as follows:—

25-pounder field guns, with equipment, trailers, and tractors
Bofors anti-aircraft gun barrels
Bofors anti-aircraft guns, mountings, equipment, and predictors
3·7-inch anti-aircraft gun barrels
3·7-inch anti-aircraft guns complete with equipment
Anti-aircraft barrels of a third type
Tank guns and mountings
Anti-tank guns
Anti-tank gun carriages
2-inch trench mortars
3-inch trench mortars
Bren guns
100-round Bren gun magazines
Browning aircraft machine guns
Browning tank type machine guns
No. 4 rifles
Safety fuse pistols
12-pounder naval guns
4-inch naval guns, 2 types
Naval gun mountings, 12 types
Depth charge throwers
4-inch smoke dischargers
Sten machine carbines
Boys anti-tank rifles
Naval pom-poms
Naval Vickers guns
Secret equipment and weapons of various types
Gun carriages

* On Jan. 27, 1943, it was officially stated that the production of Valentine tanks was being discontinued in favour of heavier models.

Canada can boast to-day that she has machine-gun plants that compare in size with any similar units in the world. Deliveries of small arms are now numbered by hundreds of thousands. Great quantities of Lee-Enfield ·303 rifles have been shipped from a Government-owned factory. During the summer of 1942 production was being stepped up at the rate of 4,000 rifles a month.

The plant manufacturing Bofors anti-aircraft guns came into full production in 1943. Prior to making complete gun units, this plant was producing barrels for the same gun. The output of tank and anti-tank guns has greatly exceeded expectations.

Particularly good results have also been obtained in the output of mountings and fittings that are often more of a mechanical problem than the guns themselves. In every instance, however, the gun-mounting program is keeping pace with the manufacture of the guns.

In the field of ammunition, production figures are particularly impressive. Canada is not only producing far in excess of a million shells each month, several million rounds of small-arms ammunition a day, and substantial quantities of aerial bombs, trench mortar bombs, and anti-tank mines, but it has created a new industry whereby shells are filled with various explosives and shipped overseas as completed rounds of ammunition. One hundred million dollars has been spent in creating vast new plants where men and women are trained for the exact operation of manufacturing and filling ammunition with high explosives and propellent charges.

In the field of shells, there are 28 different types of 15 different calibres. These range in size from the deadly 37-millimetre armour-piercing shot to the shattering 7·2-inch, and include, among others, the 25-pounder, 3·7-inch anti-aircraft, 4·5-inch howitzer, 4-inch naval, 2-pounder armour-piercing shot, and 2-inch naval. In addition, Canadian factories are fashioning large quantities of shell components—8 types of fuses, 14 types of cartridge cases, 2 types of gaines and 6 types of primers. There are also 500-pound aerial bombs, practice bombs, 2 types of depth charges, anti-tank mines, rifle grenades, pyrotechnics of 50 basic kinds for aerial, field, naval, and practice uses, 7 types of trench mortar bombs, and filled rounds of ammunition, bombs, and depth charges.

Both as to quality and as to quantity, Canadian factories hold an enviable position in the field of small-arms ammunition. Hundreds of millions of rounds have been shipped including ball, tracer, incendiary, and armour-piercing type of ·303, ·30/06, ·22, ·38, ·50, ·55, 9 mm. and 45 Colt automatic.

The bomb program ranges from 500-pound aerial bombs to practice bombs. Deliveries totalling more than 500,000 units have been made. Mortar bombs, grenades, and anti-tank mines are being turned out at the rate of tens of thousands every month.

Chemicals and Explosives.—A vital link in the industrial war effort is the production of chemicals and explosives for Canadian filling plants and for shipment overseas. The range extends from high explosives, rifle and cannon propellents, and T.N.T., down to the intermediary chemicals and raw materials. The present monthly production of explosives and chemicals runs into thousands of tons, and Canada now turns out in a few months more military explosives than during the entire war period from 1914 to 1918.

The fact that a single ammunition-filling plant occupies 450 separate buildings, scattered over an area of more than 5,000 acres, is indicative of the scope of some of the major projects.

Makers of pyrotechnics have swung over into war-time production and already hundreds of thousands of signal cartridges, flame floats, flares, smoke generators, sea markers, signal rockets, lights, and igniters, are being shipped to the R.C.A.F., the R.C.N., the Canadian Army, and to Britain and the Allied Governments.

The General Purchasing Branch of the Department of Munitions and Supply is charged with a responsibility similar in magnitude to that which would confront a municipal administration if it were called upon to feed, clothe and make comfortable a population of more than half a million. It buys medical and dental stores, beds and other furniture, kitchen and dining-room supplies, lumber and building materials, office furniture and equipment, sanitary supplies and personal equipment, household appliances, linen, electrical equipment, fuel, paint, hardware, religious and educational books and other articles, cultural and recreational facilities, and all the other essentials of life.

Between July, 1939, and January, 1942, the Defence Project Construction Branch has undertaken projects ranging from hangars for Canadian airports, building and ground services for flying schools, coast defence batteries, semi-tidal dry docks, and marine railways, to manufacturing plants. Construction contracts awarded by the Department to date aggregate more than $300,000,000. This expenditure is nearly double the total of civilian construction in Ontario in the last four years of peace.

The largest proportion of the contracts awarded have been for buildings required by the Royal Canadian Air Force and the British Commonwealth Air Training Plan. As an indication of the extent of this phase of the work, the hangars on Canadian airfields would equal a single hangar 50 miles in length, while the paved runways on the airfields would equal in length a highway stretching from Halifax to Vancouver.

A munitions program of the magnitude of that which Canada has undertaken makes tremendous demands on sources of raw material. Control of the distribution of raw materials has been imposed in order to supply war industries with steel, rubber, copper, oil, and hundreds of other vital war goods. The organization of controls is covered at pp. 21 to 22.

The actual delivery of war munitions since the beginning of the War equals the total production of Canadian industry in the year 1934—and these deliveries cover only the materials ordered by the Department of Munitions and Supply. They do not include all the timber and agricultural and other supplies that this Dominion has furnished Britain. Moreover, while deliveries have reached this amount, as much again is on order and day-by-day deliveries are being made at an increasing momentum.

This, then, is the story of Canada's war-time mobilization of industry. A story of a race against time, of the unloosing of billions of dollars, of the creation of vast new industries and the construction of acres of factory space, of the steady stream that funnels into war plants as raw materials, and comes out again as ships and tanks, 'planes and guns, ammunition and explosives, for shipment to the battle fronts in far corners of the earth.

POWER IN RELATION TO CANADIAN WAR PRODUCTION

Introduction

From the enormous demands of the aluminium industry to those of the smallest manufacturer of "bits and pieces", power plays a vital role in Canada's war effort. Fundamental to Canada's remarkable achievement in the production of war materials for the needs of her own Armed Forces and for those of the United Nations throughout the world is the possession of an abundant supply of power in readily usable form. It is the continuous flow of great quantities of energy from favourably situated power stations over networks of interconnected transmission systems to mines, mills and factories that has made possible the constantly increasing production of war materials during the past three years. These increases have been made in all forms of production: in the recovery, refining and fabrication of metals; in the manufacture of aeroplanes, ships, tanks, guns, bombs, shells, explosives, textiles and clothing, wood and paper, rubber and many other products; in the processing of foodstuffs; and in the multitudinous other requirements of a nation engaged in total war.

Unharnessed Power in Northern Canada.—Many sites such as this remain to be developed as industry extends farther northward.

Courtesy, International Paper Sales

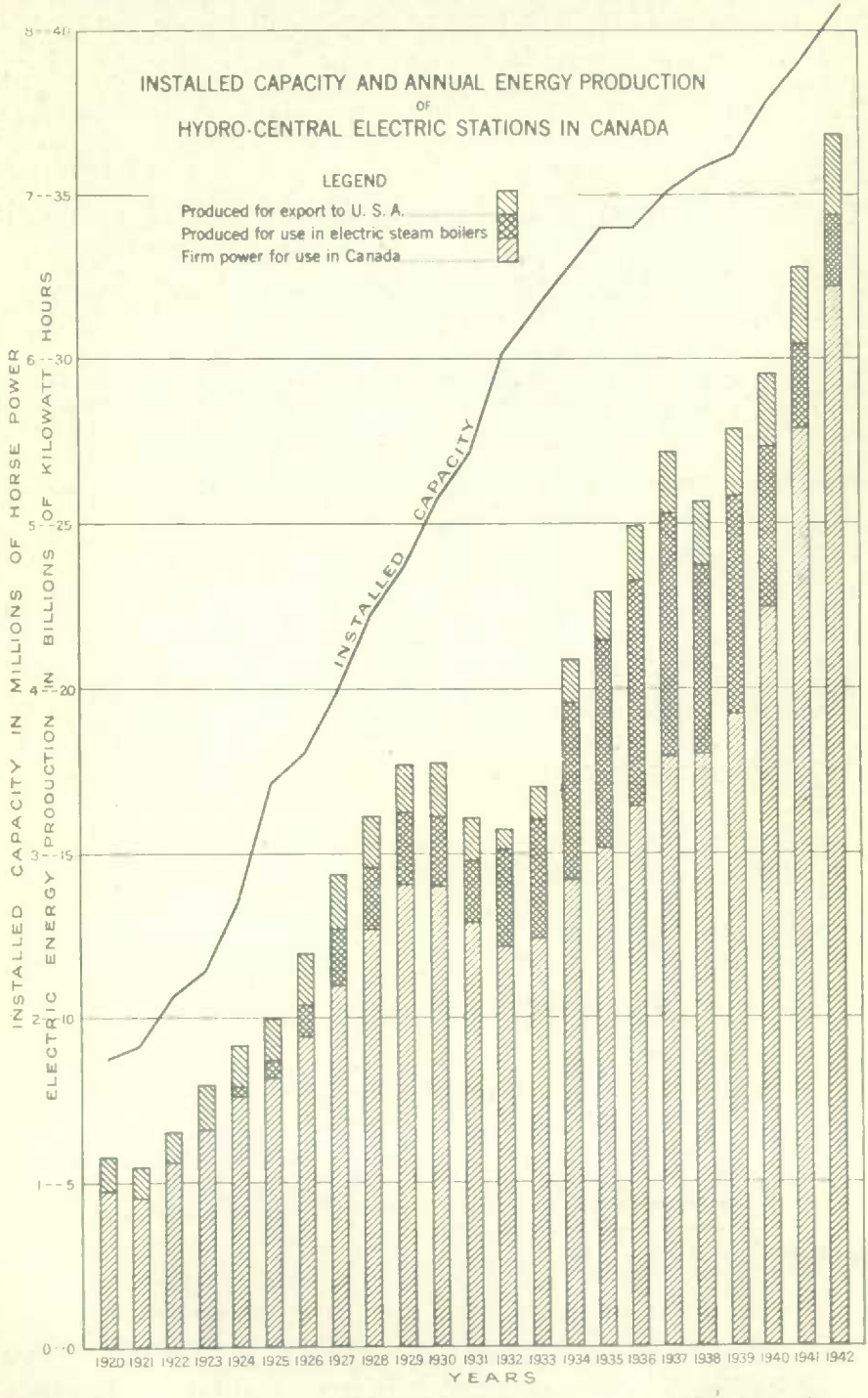
Canada is singularly fortunate as compared with other nations in the extent of developed power and in the abundant resources still undeveloped. For the development of power from fuel there are the strategically located coal measures of Nova Scotia and New Brunswick, the coal and lignite deposits of Alberta and southern Saskatchewan, the oil and natural gas wells of southern Alberta and the coal deposits of the southeastern and coastal areas of British Columbia. These fuel resources will continue to play a substantial part in the development of power in the areas mentioned. Throughout the Dominion, however, water power predominates in supplying energy for industry and for domestic and commercial use. This is indicated by the fact that more than 98 p.c. of all electricity generated in Canada for sale is produced by water power and less than 2 p.c. by fuel power. Water-power resources are unique in that they have the inherent quality of inexhaustibility by use—their use by industry in no way limits the ever-recurring cycle of evaporation, condensation, precipitation, and run-off by which their supply is renewed.

Another significant feature, as affecting Canada, is the fortunate occurrence of large water-power resources in what has been termed "the acute fuel zone" where native coal is not conveniently or economically available. The Provinces of Ontario and Quebec, without native coal except for an undeveloped lignite field in the James Bay area, include the principal centres of population and manufacturing, and abound in many raw materials of industry; they contain within their borders more than one-half of the total available water-power resources and more than three-quarters of the developed water powers of Canada. In other provinces also, the incidence of water power in proximity to other resources, particularly those of mine and forest, is likewise favourable.

The Power Situation in Canada in 1914 Compared with 1939

In considering the fundamental position occupied by power and particularly water power for virtually all war production in Canada, it is of interest to examine and compare the situation that existed at the outbreak of the First World War with that obtaining at the commencement of the present struggle. At the beginning of the First World War water-power plants in Canada had a total installed capacity of 1,700,000 h.p.; by the end of 1939, shortly after the commencement of the present war, this total had grown to 8,289,000 h.p.—four and three-quarter times the installed capacity of 1914. During the four years of the First World War the increase was relatively small, only 427,000 h.p. of new installation being added. Following that war, however, a period of pronounced industrial expansion set in which brought about great increases in power demand, particularly by such large power users as the pulp and paper, chemical and metallurgical industries. To keep ahead of this power demand, a great increase in water-power development took place; almost 6,000,000 h.p. of new installation being added between 1918 and 1939.

The years between 1918 and 1939 witnessed first a very rapid expansion in business, culminating in 1929, and then a period of pronounced depression, the results of which were still being felt to some extent in 1939. The primary demands for power followed very closely the same course—first a rapid increase to 1929, then recession and a recovery to 1929 levels in 1934, and finally a period of moderate growth to 1939. It is not possible, however, to adjust the construction of new water-power installations to synchronize with the variations of the business cycle. Water-power development involves the construction of dams, canals, pipe-lines, power stations, and other components, the construction of which covers, in most cases, a period of several years. In 1929, in anticipation of continued growth of power demand, a number of large


INSTALLED CAPACITY AND ANNUAL ENERGY PRODUCTION
OF
HYDRO-CENTRAL ELECTRIC STATIONS IN CANADA
LEGEND
Produced for export to U. S. A.
Produced for use in electric steam boilers
Firm power for use in Canada
INSTALLED CAPACITY
INSTALLED CAPACITY IN MILLIONS OF HORSE POWER
ELECTRIC ENERGY PRODUCTION IN BILLIONS OF KILOWATT HOURS
8--40
7--35
6--30
5--25
4--20
3--15
2--10
1--5
0--0
1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942
YEARS

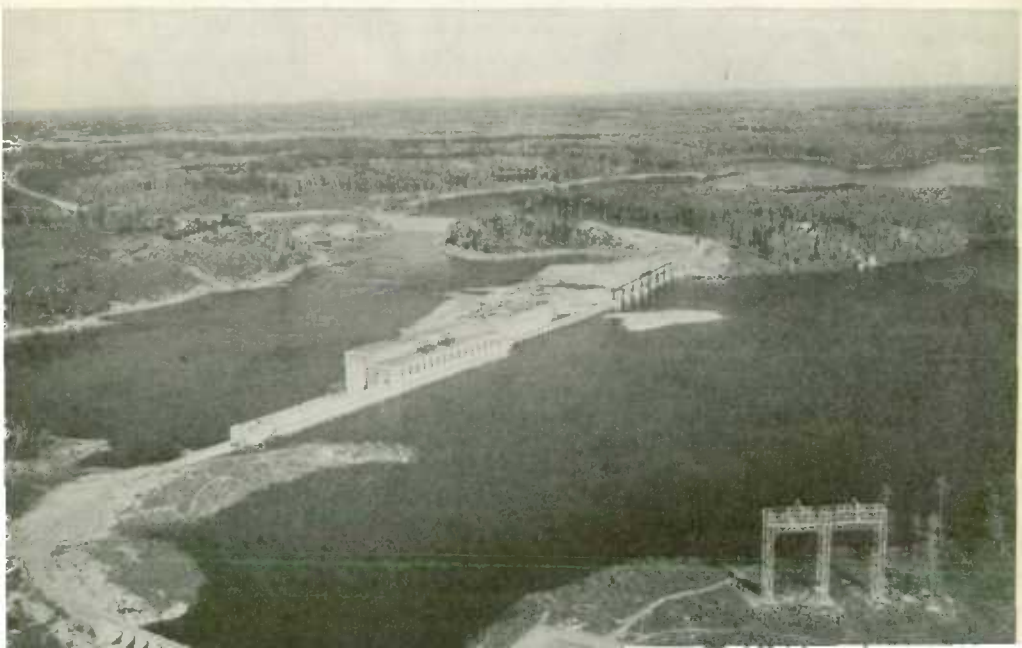
hydro-electric power developments were in course of construction. Financial and other conditions precluding the discontinuance of construction of these developments, the total of water-power installations continued to increase, throughout the depression years, whereas the demand for power fell off. To provide a market for the surplus power, made available by this increase in installed capacity, a very substantial increase was made in the use of electric energy for the raising of process steam in the pulp and paper industry. This use resulted from the development of the electric steam boiler to absorb the surplus of power created by the termination of the First World War. Although the unit rate was low, the revenue received from the sale of this surplus, or secondary, power served a useful purpose in helping to carry the fixed charges on excess power capacity. The use of surplus or secondary power in electric boilers reached a maximum in 1937 when 7,313,000,000 kwh. were sold for this purpose; the equivalent of more than 1,000,000 continuous horse-power. The situation is illustrated in the chart on p. 45 which shows, for the period 1920-41, inclusive, the growth of installed capacity in hydro central electric stations in Canada and the corresponding production of kilowatt hours in each year divided as between the energy produced for export to the United States, for use in electric steam boilers, and for uses other than these two or what may be termed for primary use in Canada.

The Situation During the Present War

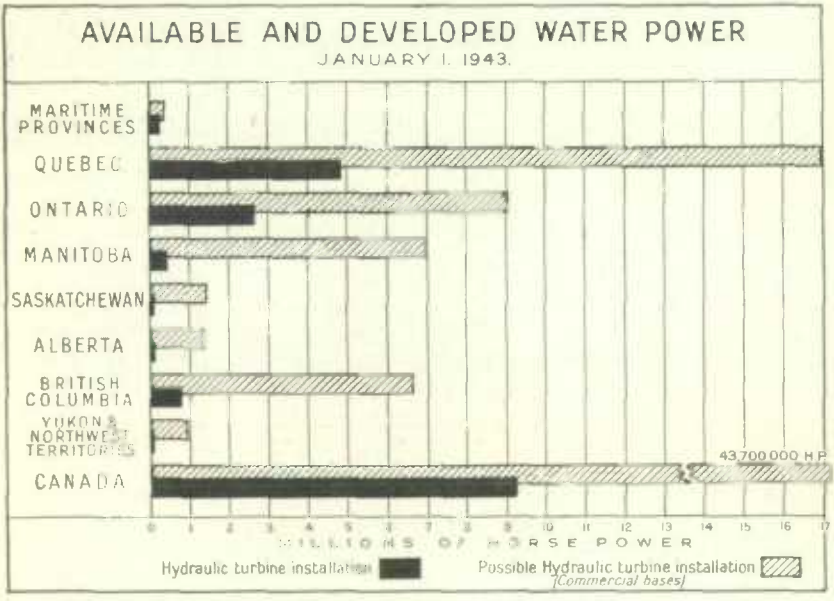
At the outset of the present war, therefore, and as a result of the situation that has just been described, Canada was in the fortunate position of having almost immediately available a large reservoir of power that could be diverted to war industry. There were, as well, certain water-power undertakings still uncompleted in which new units could be brought into operation with relatively little delay. During the three years 1939, 1940 and 1941 new water-power installations were added to the extent of 654,000 h.p. In this period the annual production of electric energy for

A Typical Developed Water-Power Site in the Prairie Provinces.—In the lower right-hand corner part of the step-up transformer system is shown. The power is stepped-up to high voltage for economical transmission over long distances.

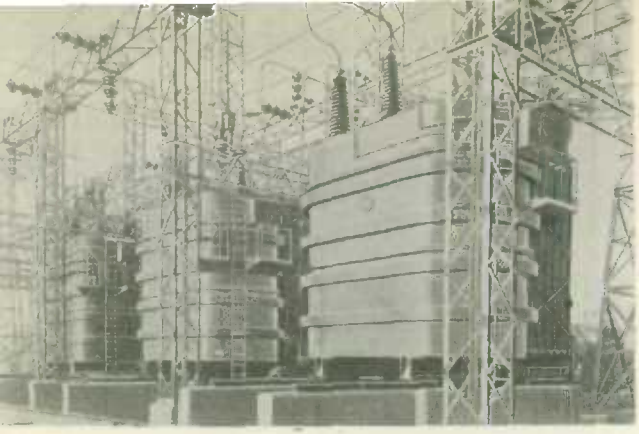
Courtesy, Dominion Water and Power Bureau



primary use in Canada by hydro central electric stations increased by 9,876,000,000 kwh. which is the equivalent of more than 1,500,000 continuous horse-power and probably represents the entire power output of hydraulic turbines totalling more than 2,000,000 h.p. This great increase in primary power produced was accomplished by the installation of additional generating equipment; by fuller utilization of existing installations; by the diversion of additional water for power production at Niagara Falls; by the conversion to primary use of large amounts of power formerly used in electric boilers; and by the continuation of daylight saving throughout the winter months. As the demand for power continued to increase, additional measures involving economy in domestic, commercial and municipal use, and the diversion of power from non-essential to essential industries were instituted.



It is difficult to make any definite estimate of the amount of power actually being used in Canada in connection with the war effort. In addition to the power being utilized directly for the production of war equipment and materials, there is undoubtedly a large quantity of power being used for works and services closely related to primary war production but which it is difficult to segregate from non-war power demands. It is safe to say, however, that war demands have accounted for the increase of more than the 1,500,000 continuous horse-power which has taken place in electric-power production for primary use during the past three years and it should be no exaggeration to state that 2,200,000 h.p., or one-quarter of the total water-power installation in Canada, is now being devoted to war purposes. Expressed in man-power, on the commonly used basis of the work of ten men being the equivalent of one horse-power, it may be said that the amount of water power being used for war purposes corresponds to the work of an army of 22,000,000 men. This gives some idea of the tremendous importance of water power in supplying the energy necessary to carry out Canada's impressive program of war production.



A Battery of Transformers at an Ontario Station.—These transformers step-down the power before it is distributed to consumers.

Courtesy, Canadian General Electric Co.

Power in Relation to the Manufacturing and Mining Industries

The Dominion Bureau of Statistics has compiled statistics showing the power equipment installed in the manufacturing and mining industries from 1923 to 1940. The two industries together account for almost all industrial power used. It would be difficult to compile such data for the primary industries and it would not change the totals materially. The total power equipment available in the combined industries rose from 2,448,219 h.p. in 1923 to 6,352,775 h.p. in 1940, or by 160 p.c., and the total electric motors from 1,488,523 h.p. to 5,136,200 h.p., or by 245 p.c. The ratio of electric motors to total power equipment in the manufacturing industries rose from 61 p.c. in 1923 to 81 p.c. in 1940. In the mining industries very much the same picture is shown, the ratio having risen from 57 p.c. in 1923 to 80 p.c. in 1940.

It is interesting to note that both the manufacturing and mining industries relied upon electricity for more than one-half of their power needs as early as 1923, and that to-day electric motors do four-fifths of the work in these industries. The equipment in the manufacturing industries operated by power purchased from central electric stations increased by 272 p.c. between 1923 and 1940. In the earlier year 73 p.c. of the electric motors were operated by purchased electricity and in 1940 the ratio had increased to 83 p.c.

The mining industries showed a much greater relative increase in the proportion of their power equipment operated by purchased electricity than did manufacturing, the increase from 1923 to 1940 in electric motors so operated being 528 p.c. The ratio of motors using power generated by the operators also rose from 69 p.c. to 88 p.c.

These statements illustrate the trend towards electric drive and away from other forms of power, although some exaggeration may be introduced because of the practice of installing motors at each machine or group of machines with a total capacity greater than would be necessary if only one large motor or a prime mover with belts and shafting were used.

While information as to power equipment installed is useful as indicating the trend towards electrification, the kilowatt hours purchased show the actual utilization of power. In 1936 the two groups of industry purchased 14,783,000,000 kwh.; this figure rose to 17,010,000,000 and 18,398,000,000 kwh. in 1936 and 1937, fell to 16,690,000,000 kwh. in 1938 and rose again to 18,560,000,000 and 19,506,000,000 kwh. in 1939 and 1940.

Between 1935 and 1940 the purchase of power by the manufacturing industries had increased by 29 p.c. and by the mining industries by 74 p.c. As the total increase in the consumption of power in the latter group increased by 81 p.c., a greater use of power generated within the industry is indicated, particularly in the metal-mining industries, where the consumption of such power has increased from 91,553,000 kwh. in 1935 to 245,949,000 kwh. in 1940, or by 169 p.c. The opening of mines in isolated

regions, where no central station power is available, or the initial stages of development work, where it is preferable to work the small-scale operations by locally generated power, are some of the possible reasons for such a trend.

The table below shows the total consumption of electric power, whether purchased or generated by the industry, during the 1935-40 period.

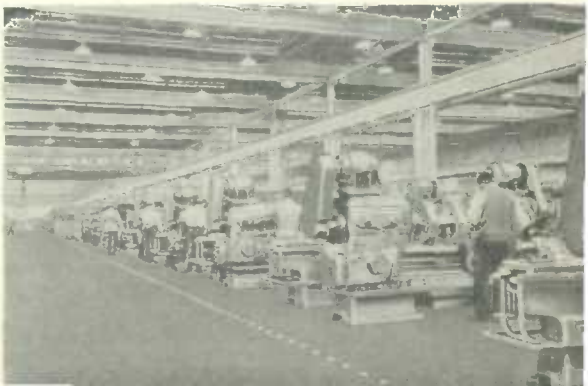
Consumption of Electricity in Manufacturing and Mining Industries, 1935–40

Year	Manufacturing	Mining	Total
	'000 kwh.	'000 kwh.	'000 kwh.
1935	15,389,562	1,027,577	16,417,139
1936	17,696,749	999,026	18,695,775
1937	19,421,446	1,502,949	20,924,395
1938	17,492,526	1,635,888	19,128,414
1939	19,430,434	1,761,339	21,191,773
1940	20,595,913	1,854,204	22,450,117

Special War-time Uses for Power in Manufacturing.—The tremendous growth in the consumption of power by Canada's electro-chemical and electro-metallurgical industries, which have been greatly expanded for munitions production, is shown in the following table. Large quantities of power are required in the manufacture of such chemicals as calcium carbide, cyanamide, chlorine, caustic soda, synthetic ammonia, such electric furnace products as aluminium, artificial abrasives, and the ferro-alloys, and in the electrolytic refining of copper, nickel, lead and zinc. It is because of the potential power resources that many of these chemical plants were established in this country, but it is also a fact that primary mine materials were developed to the final refinery stage because power was available within economic distance of most of the large base-metal operations.

Consumption of Electricity in the Electro-Metallurgical and Electro-Chemical Plants in Canada, 1927–41

Year	Kilowatt Hours	Year	Kilowatt Hours
	No.		No.
1927	2,232,638,581	1935	2,600,710,390
1928	2,396,121,395	1936	3,565,623,955
1929	2,699,014,444	1937	4,265,870,654
1930	2,602,986,352	1938	4,478,887,159
1931	2,410,653,918	1939	4,928,839,148
1932	1,720,481,386	1940	6,378,915,562
1933	1,833,165,904	1941	8,899,327,126
1934	2,320,996,423		



The Application of Electric Power to Heavy Industry.—Motor-driven machine tools in a Canadian war plant.

Courtesy, Canadian General Electric Co.

The production of aluminium consumes much electric energy. In the construction of aeroplanes aluminium comprises by weight 69 p.c. of the air-frame, 23 p.c. of the engine, and 24 p.c. of the propeller. This metal is also used in many other munitions of war. Every pound of aluminium produced requires approximately 10 kwh. of electric energy and as it is estimated that Canada is supplying one-third of the United Nations' requirements of aluminium the enormous demand for electric energy may be readily appreciated. It is probable that the aluminium industry is taking more than one-sixth of Canada's production of hydro-electric energy.

Turning from the production of basic metals and materials, hydro-electric energy plays a vital role in supplying the motive power for the manufacture of virtually all war equipment. Aeroplanes and ships, tanks and all varieties of motor-vehicles, guns and shells and bombs, communication equipment, uniforms and clothing, rubber tires and goods, processed foods and the host of other things required for the Armed Forces—all these are turned out by machines driven by electric motors whose demand for power, although much less than that of the metallurgical and chemical industries, amounts to several hundreds of thousands of horse-power. In a great many cases the machines to make this equipment had first to be manufactured, large quantities of power being used for this purpose.

In addition to all this, a very substantial increase in the demand for electric energy has arisen from the requirements for lighting and other electric services in new factories and homes or quarters for war workers, for the lighting and servicing of airfields, hangars, and quarters of the enormously expanded air-training program, and for quarters and facilities constructed throughout Canada for the accommodation of Army and Navy personnel.

It is estimated that Canada is supplying 90 p.c. of the United Nations' requirements of nickel, 18 p.c. of those of zinc, 16 p.c. of their requirements of lead, 15 p.c. of their requirements of copper and lesser amounts of numerous other vital war metals. Great quantities of electric energy are required for the mining and reduction of the ores and for the refining of all of these metals. Magnesium is now coming into production in Canada on a growing scale and magnesium has an electric energy requirement per pound of metal almost as great as that of aluminium. Chemicals and explosives, too, are being produced in large quantities requiring very substantial amounts of electric energy.

The success of Canada's munitions program would have been impossible without the large supplies of power speedily available. The majority of munitions plants are approaching peak production and none have been delayed or restricted by lack of power. The large hydraulic installations now in progress will ensure the continuance of this supply and provide for future expansion.

CHAPTER I

Population—Vital Statistics

Population

The present population of the earth is estimated at approximately 2,170,000,000.* The British Empire, which covers slightly less than one-quarter of the land area of the earth, has an estimated population of 500,774,000† or slightly less than one-quarter of the world's population. Canada, which occupies over one-quarter of the area of the British Empire, has a population of 11,506,655 (1941) or only about one forty-fifth of the Empire population. The latest official estimates of population of other British countries are: the British Isles, 50,681,000 (1939); Union of South Africa, 10,521,000 (1941); Australia, 6,997,000 (1939); New Zealand, 1,629,000 (1941); all India, 382,000,000 (1939). While there is no absolute standard for population density, a certain minimum density is desirable.

Growth of the Canadian Population.—The general rate of population increase in Canada in the opening decade of the present century was 34 p.c., the greatest for that decade of any country in the world. In the second decade the rate was 22 p.c., again the greatest, with the one exception of Australia where growth was greater by a fraction of 1 p.c. A century earlier the United States grew 35 p.c. decade by decade until 1860, but with this exception there has been no recorded example of more rapid population growth than that of Canada in the early decades of the twentieth century. In 1871, only 2·97 p.c. of the population dwelt west of Lake of the Woods. In 1921 the proportion was 28·37 p.c., in 1931, 29·51 p.c. and in 1941, 28·30 p.c.

* The Statistical Year Book of the League of Nations, 1940-41, gives the population of the world as 2,170,000,000 not including estimates of certain populations, chiefly in Asia and Africa, where censuses are incomplete or do not exist.

† The Statesman's Year Book, 1942.

Populations of Canada, Census Years 1871-1941

Province	1871	1881	1891	1901	1911	1921	1931	1941
P.E.I.	94,021	108,891	109,078	103,259	93,728	88,615	88,038	95,047
N.S.	387,800	440,572	450,396	459,574	492,338	523,837	512,846	577,962
N.B.	285,594	321,233	321,263	331,120	351,889	387,876	408,219	457,401
Que.	1,191,516	1,359,027	1,488,535	1,648,898	2,005,776	2,360,665[1]	2,874,774[4]	3,331,882
Ont.	1,620,851	1,926,922	2,114,321	2,182,947	2,527,292	2,933,662	3,431,683	3,787,655
Man.	25,228	62,260	152,506	255,211	461,394	610,118	700,139	729,744
Sask.	–	–	–	91,279	492,432	757,510	921,785	895,992
Alta.	–	–	–	73,022	374,295	588,454	731,605	796,169
B.C.	36,247	49,459	98,173	178,657	392,480	524,582	694,263	817,861
Yukon	–	–	–	27,219	8,512	4,157	4,230	4,914
N.W.T.[2]	48,000	56,446	98,967	20,129	6,507	7,988	9,204[4]	12,028
Canada	**3,689,257**	**4,324,810**	**4,833,239**	**5,371,315**	**7,206,643**	**8,787,949**[3]	**10,376,786**	**11,506,655**

[1] Revised in accordance with the Labrador Award of the Privy Council, Mar. 1, 1927. [2] The decreases shown in the population of the Northwest Territories since 1891 are due to the separation therefrom of vast areas to form Alberta, Saskatchewan, and Yukon and to extend the boundaries of Quebec, Ontario, and Manitoba. [3] Includes 485 members of the Royal Canadian Navy. [4] As corrected by transfer of the populations of Fort Harrison and Povungnituk (519) from the Northwest Territories to Quebec.

Urban and Rural Population.—As regards urban and rural distribution, though Canada is still largely agricultural, town dwellers in 1941 exceeded the numbers living upon the land (6,252,416 urban and 5,254,239 rural). Seventy years ago the towns and cities of Canada accounted for only 19·58 p.c. of the people (722,343 urban and 2,966,914 rural), and at the beginning of the century the percentage was but 37·50.

Populations of Cities and Towns having Over 25,000 Inhabitants

NOTE.—In all cases the populations for previous censuses have been rearranged as far as possible to compare with those of the same areas in 1941.

City or Town	Province	Populations					
		1891	1901	1911	1921	1931	1941
Montreal	Quebec	256,723	328,172	490,504	618,506	818,577	903,007
Toronto	Ontario	181,215	209,892	381,833	521,893	631,207	667,457
Vancouver	British Columbia	13,709	29,432	120,847	163,220	246,593	275,353
Winnipeg	Manitoba	25,639	42,340	136,035	179,087	218,785	221,960
Hamilton	Ontario	48,959	52,634	81,969	114,151	155,547	166,337
Quebec	Quebec	63,090	68,840	78,710	95,193	130,594	150,757
Ottawa	Ontario	44,154	59,928	87,062	107,843	126,872	154,951
Calgary	Alberta	3,876	4,091	43,704	63,305	83,761	88,904
Edmonton	Alberta	–	2,626	24,900	58,821	79,197	93,817
London	Ontario	31,977	37,976	46,300	60,959	71,148	78,264
Windsor	Ontario	12,607	15,198	23,433	55,935	98,179	105,311
Verdun	Quebec	296	1,898	11,629	25,001	60,745	67,349
Halifax	Nova Scotia	38,437	40,832	46,619	58,372	59,275	70,488
Regina	Saskatchewan	–	2,249	30,213	34,432	53,209	58,245
Saint John	New Brunswick	39,179	40,711	42,511	47,166	47,514	51,741
Saskatoon	Saskatchewan	–	–	12,004	25,739	43,291	43,027
Victoria	British Columbia	16,841	20,919	31,660	38,727	39,082	44,068
Three Rivers	Quebec	8,334	9,981	13,691	22,367	35,450	42,007
Kitchener	Ontario	7,425	9,747	15,196	21,763	30,793	35,657
Brantford	Ontario	12,753	16,619	23,132	29,440	30,107	31,948
Hull	Quebec	11,264	13,993	18,222	24,117	29,433	32,947
Sherbrooke	Quebec	10,097	11,765	16,405	23,515	28,933	35,965
Outremont	Quebec	795	1,148	4,820	13,249	28,641	30,751
Fort William	Ontario	2,176	3,633	16,499	20,541	26,277	30,585
St. Catharines	Ontario	9,170	9,946	12,484	19,881	24,753	30,275
Kingston	Ontario	19,263	17,961	18,874	21,753	23,439	30,126
Oshawa	Ontario	4,066	4,394	7,436	11,940	23,439	26,813
Sydney	Nova Scotia	2,427	9,909	17,723	22,545	23,089	28,305
Sault Ste. Marie	Ontario	2,414	7,169	14,920	21,092	23,082	25,794
Glace Bay	Nova Scotia	2,459	6,945	16,562	17,007	20,706	25,147
Sudbury	Ontario	–	2,027	4,150	8,621	18,518	32,203
Timmins	Ontario	–	–	–	3,843	14,200	28,790
Peterborough	Ontario	11,391	12,886	18,360	20,994	22,327	25,350
Westmount	Quebec	3,076	8,856	14,579	17,593	24,235	26,047

Aboriginal Races

According to 1939 figures, the aboriginal population amounts in all to little more than 1 p.c. of the total population. The majority is made up of Indians.

Indians.—Indian affairs are administered by the Indian Affairs Branch of the Department of Mines and Resources under the authority of the Indian Act. Reserves have been set aside for the various bands of Indians in the Dominion since the earliest times and the Indians located thereon are under the supervision of the local agents of the Branch. The activities of the Branch, as guardians of the Indians, include the control of Indian education, the care of health, etc., the development of agriculture and other pursuits among them, the administration of their funds and legal transactions, and the general supervision of their welfare.

The Indian Act provides for enfranchisement of Indians. In the older provinces, where the Indians have been longer in contact with civilization, many are becoming

MONTREAL TERCENTENARY
1642-1942

Montreal, in 1942, completed the third century of its history. It was in mid-May, 1642, that some three score pioneers, commanded by Sieur de Maisonneuve, landed on the shore near the present Place Royale and set up their first camp. In 1941 Greater Montreal had a population of 1,139,921, of whom about 700,000 are of French origin. With the exception of Paris, Montreal has the largest French population of any city in the world. Montreal is cosmopolitan: according to the Census of 1931 (origin data for 1941 are not yet available) 265,000 of its population were of British origin, 58,000 Hebrew, 22,000 Italians, 7,800 Polish, 6,700 German and 39,000 of other racial origins. Maisonneuve and his companions were both farmers and soldiers. They cleared the land to build their homes and the pathways through the woods became the first city streets. Montreal has to-day 900 miles of streets and boulevards. The small village industries have grown until Montreal has become Canada's largest industrial centre and, in tonage shipped, the second largest port on the North American continent. The illustrations show St. James Street in 1837, 1869 and as it is to-day.

Eskimos Examining their Fishing Nets at Coppermine, N.W.T.

Courtesy, Department of Mines and Resources

enfranchised. Great discretion, however, is exercised by the Government in dealing with this problem. Indians who become enfranchised lose the special protection attached to their wardship, so that premature enfranchisement must be avoided.

According to the count in 1939 made by the Department of Indian Affairs (1941 Census figures are not yet available), the total number of Indians was 118,378, made up by provinces as follows: P.E.I., 274; N.S., 2,165; N.B., 1,922; Que., 14,578; Ont., 30,145; Man., 14,561; Sask., 13,020; Alta., 12,163; B.C., 24,276; Yukon, 1,550; N.W.T., 3,724.

Eskimos.—The Eskimos of Canada are found principally on the northern fringe of the mainland and on islands in the Arctic Archipelago and in Hudson Bay, although in the Baker Lake-Chesterfield Inlet area on the west side of Hudson Bay there are bands of Eskimos who are essentially an inland people, and who subsist chiefly on caribou.

The administrative care of Eskimos outside of the organized provinces devolves upon the Lands, Parks and Forests Branch of the Department of Mines and Resources, which, by regulative measures, conserves the natural resources necessary to their subsistence. Contact with the Eskimos is maintained through permanent stations in the eastern, central, and western Arctic, at a number of which medical officers are located, and by means of the annual Canadian Eastern Arctic Patrol by steamship. Law and order in all regions in Canada inhabited by Eskimos is maintained by the Royal Canadian Mounted Police.

According to the Dominion Census of 1931 (1941 figures not yet available), there were 5,979 Eskimos in Canada, 78 p.c. of these being in the Northwest Territories. The distribution by provinces was: N.W.T., 4,670; Que., 1,159; Yukon, 85; Man., 62; and Alta., 3.

Sex and Age Distribution.—The population of Canada in 1941 was made up of 5,900,536 males and 5,606,119 females. Thus there were 513 males and 487 females per thousand population as compared with 518 males and 482 females in 1931. The trend of masculinity has decreased in late years due to the falling off in immigration which is always a strong influence in building up a masculine predominance in the age groups between 15 and 30 years. However, for 1941 the provinces of Prince Edward Island and New Brunswick showed a small increase in masculinity compared with 1931; elsewhere (with the exception of the Northwest Territories where the masculinity showed a substantial increase from 537 per 1,000 in 1931 to 557 in 1941) the proportion of females has increased.

Sex and Age Distribution, by Provinces, 1941

Age Group	Prince Edward Island		Nova Scotia		New Brunswick	
	Males	Females	Males	Females	Males	Females
0– 4 years	4,877	4,648	29,353	28,417	25,337	24,725
5– 9 "	4,868	4,790	28,268	27,416	24,176	23,732
10–14 "	4,834	4,656	28,120	27,266	23,957	23,864
15–19 "	4,678	4,506	28,523	27,898	24,679	23,765
20–24 "	4,472	3,790	27,934	27,031	22,026	20,281
25–34 "	7,326	6,165	47,719	42,785	34,916	31,920
35–44 "	5,242	4,732	32,681	30,511	24,733	23,902
45–54 "	4,690	4,489	28,084	26,544	21,497	20,156
55–64 "	3,755	3,573	22,036	20,350	16,362	14,939
65–69 "	1,531	1,469	8,939	8,188	6,461	5,760
70 or over	2,955	3,001	14,387	15,512	9,953	10,260
All Ages	**49,228**	**45,819**	**296,044**	**281,918**	**234,097**	**223,304**
	Quebec		Ontario		Manitoba	
0– 4 years	179,007	174,428	151,497	146,427	31,349	30,310
5– 9 "	175,179	172,761	152,909	148,606	31,657	30,567
10–14 "	181,899	179,539	164,605	160,199	34,095	33,001
15–19 "	175,941	175,252	172,133	166,983	36,675	36,718
20–24 "	148,355	155,882	163,579	160,410	34,898	34,375
25–34 "	262,195	266,555	305,515	296,695	59,225	58,055
35–44 "	201,846	198,754	267,392	251,309	45,514	42,594
45–54 "	155,708	146,612	229,448	217,263	44,422	38,213
55–64 "	106,405	99,609	169,281	162,079	35,409	27,016
65–69 "	36,162	34,997	57,724	58,618	10,649	8,390
70 or over	50,285	54,511	87,118	97,865	14,186	12,426
All Ages	**1,672,982**	**1,658,900**	**1,921,201**	**1,866,454**	**378,079**	**351,665**
	Saskatchewan		Alberta		British Columbia	
0– 4 years	43,312	41,641	37,975	36,926	30,118	29,394
5– 9 "	44,683	43,550	38,425	37,423	27,969	26,946
10–14 "	48,231	46,659	39,198	38,505	30,580	30,126
15–19 "	48,857	47,152	39,335	39,023	33,727	32,893
20–24 "	44,204	40,893	37,524	36,090	34,153	35,094
25–34 "	68,850	63,345	63,955	58,583	68,359	65,617
35–44 "	53,225	46,180	55,124	43,813	57,935	48,461
45–54 "	54,937	41,261	50,885	36,711	57,741	46,723
55–64 "	44,343	28,417	39,939	25,494	55,565	38,388
65–69 "	12,351	7,997	11,150	7,353	17,266	12,327
70 or over	14,570	11,334	12,948	9,790	21,618	16,861
All Ages	**477,563**	**418,429**	**426,458**	**369,711**	**435,031**	**382,830**

Immigration

Total immigrants into Canada during the fiscal year ended in 1942 numbered 8,865 as compared with 11,496 in 1941 and 16,205 in 1940.

English, Scottish, Irish, and Welsh from overseas numbered 2,182 as compared with 3,104 and 3,566 in 1941 and 1940, respectively; immigrants from the United States totalled 6,311 in 1942 as compared with 7,443 and 5,748, respectively, for the two previous years; from other countries the number was 372 as compared with 949 and 6,891.

A movement not included in the immigration statistics is that of 'returned Canadians'. These Canadian citizens are divided into three groups: (*a*) Canadian born; (*b*) British born (outside of Canada); and (*c*) naturalized in Canada. The total for 1941-42 was 3,318 as compared with 5,140 in 1940-41.

A Farming Village in Lake St. John County, Que.—The long narrow farms prevail the clustering of houses along the main road and a more neighbourly village life. This is typical of the old French 'seigneurial' system of settlement.

Courtesy, Canadian National Railways

Although tourists entering Canada are not immigrants, their admission calls for an immigration examination on the International Boundary and at ocean ports. In 1941-42 the number of entries in this class totalled 18,012,000 made up of 13,948,000 tourists, etc., 4,061,000 residents returning and 3,000 Canadians returning after residence in the United States, as mentioned in the preceding paragraph; in 1940-41 the total entries numbered 18,416,000 divided between 13,176,000 tourists, etc., 5,235,000 returning residents and 5,000 returned Canadians.

Vital Statistics

Canada has had a national system of registration since 1920, organized by the Dominion Bureau of Statistics in collaboration with the Registration Officials in the provinces.

Births, Deaths and Marriages in Canada, by Provinces

Province	Births			Deaths			Marriages		
	1941[1]		1926	1941[1]		1926	1941[1]		1926
	No.	Rate per M	Rate per M	No.	Rate per M	Rate per M	No.	Rate per M	Rate per M
Prince Edward Is.	2,036	21·7	20·1	1,129	12·0	10·3	671	7·1	5·3
Nova Scotia	13,623	23·8	21·3	6,815	11·9	12·4	6,575	11·5	5·6
New Brunswick	12,253	27·0	26·1	5,176	11·4	12·6	4,938	10·9	7·4
Quebec	88,935	26·8	31·6	34,309	10·3	14·3	32,783	9·9	6·8
Ontario	72,177	19·2	21·4	39,179	10·4	11·3	43,270	11·5	7·5
Manitoba	14,812	20·5	22·9	6,495	9·0	8·3	8,305	11·5	7·1
Saskatchewan	18,451	20·8	25·2	6,458	7·3	7·4	7,036	7·9	6·7
Alberta	17,249	21·9	23·8	6,385	8·1	8·5	8,467	10·7	7·4
British Columbia	14,947	18·5	16·6	8,481	10·5	9·0	9,756	12·1	7·3
Canada[2]	**254,483**	**22·3**	**24·7**	**114,427**	**10·0**	**11·4**	**121,801**	**10·7**	**7·1**

[1] Preliminary figures. [2] Exclusive of Yukon and the Northwest Territories.

Births.—From 1926 to 1930 the number of births showed an upward trend rising from 232,750 to 243,495. This movement was reversed until 1939 when the number of births was 229,468 as against 229,446 in 1938. In 1940 the figure rose to 244,316 and in 1941 to 254,483, the highest since the Province of Quebec entered the Registration Area in 1926. Because of the growing population, the rate showed a steady drop from 1926 to 1937 of from 24·7 to 19·8 but in 1940 the rate stood at 21·5 and in 1941 at 22·3.

The decline in births during the depression is apparent and, in great measure, was affected by rural depopulation.

Deaths.—The ten leading causes of death accounted for well over 76 p.c. of the total deaths in Canada in 1941 and "diseases of the heart", considered as a group, was the most important cause. Cancer was second; incidentally, the death rate from this cause has advanced almost every year from 1926 to 1941, the increase in that period being from 80·7 to 117·4 per 100,000 population; there is every indication of a smoothing out of the rate curve for this disease. This increase in deaths is rather misleading being due to improvement in diagnostic and X-ray techniques and to the ageing of the Canadian population. In 1926 pneumonia was in third place with a rate of 89·3. Its drop in 1941 to eighth place with a rate of 52·1 is no doubt attributable to the general use of sulphanilamide and its derivatives as antigens for this disease.

Infant Mortality.—In Canada during recent years this rate has shown a substantial reduction, falling from 102 per 1,000 live births in 1926 to 61 in 1939 and 56 in 1940. However, in 1941 the rate has increased to 60 per 1,000 live births.

Infant Deaths and Death Rates in Canada

Province	Infants under One Year				Rates per 1,000 Live Births			
	1926	1939	1940	1941[1]	1926	1939	1940	1941[1]
Prince Edward Island	123	168	137	162	70	79	65	80
Nova Scotia	882	761	802	894	80	64	62	66
New Brunswick	1,095	893	934	931	106	79	80	76
Quebec	11,666	6,210	5,856	6,760	142	78	70	76
Ontario	5,302	2,979	2,959	3,290	78	46	43	46
Manitoba	1,122	752	756	788	77	55	51	53
Saskatchewan	1,681	930	979	946	81	51	51	51
Alberta	1,233	763	834	877	85	46	48	51
British Columbia	588	483	526	549	58	39	38	37
Canada[2]	**23,692**	**13,939**	**13,783**	**15,197**	**102**	**61**	**56**	**60**

[1] Preliminary figures. [2] Exclusive of Yukon and the Northwest Territories.

Natural Increase.—Natural increase results from the difference between births and deaths. The birth rate (as indicated in the table at p. 56) is, in general, declining in Canada, although it increased in 1940 and 1941. The death rate is declining at a somewhat lower rate (1937 and 1941 show a slight rise) with the result that the rate of natural increase has been downward on the whole since 1930. The rate for 1926 was 13·3 per 1,000; for 1929 it was 12·2; for 1933, 11·3; for 1938, 11·0; for 1940, 11·7; and for 1941, 12·3.

Marriages.—In 1929 marriages in Canada numbered 77,288. The depression exercised a marked influence on marriages and the marriage rate, causing a downward trend until 1933 when a gradual recovery commenced. The increase continued until 1938 when the yearly total for marriages stood at 88,438. The influence of the War is reflected in the abnormally large figures for the years 1939, 1940 and 1941 of 103,658, 123,318 and 121,801, respectively.

CHAPTER II

Survey of Production—National Income

Survey of Production

Productive activities in 1942 were greatly stimulated by the growing requirements of the War and favourable climatic conditions contributed to the largest farm crops in history. These circumstances, however, are not reflected in the statistics of this chapter, since the latest figures of the survey cover the year 1940. Nevertheless, it can safely be said that, while the output of commodities, after elimination of duplication, rose 18 p.c. in 1940 over the preceding year, the advances in the following years were very much greater. Values produced by nine main branches of production were $3,824,000,000 in 1940. Those for later years cannot be stated definitely, but the index of the physical volume of business recorded a gain of 32·7 p.c. in 1941 over the preceding year, while the rise in employment was 22·6 p.c. The index of wholesale prices on the base of 1926 was 90·0 in 1941, a gain of 8·6 p.c. Indexes of the physical volume of business and wholesale prices in the first ten months showed gains of 48 p.c. and 7·2 p.c., respectively, over the standing in the same period of 1941. The index of employment for Oct. 1, 1942, was 181·3 against 165·8 on the same date of 1941. The expansion in farming and manufacturing production contingent upon war demand and the record field crops were the main elements in the maximum net values of output registered for 1942.

In this chapter only those industries generally considered to have a *direct* connection with production are considered, as, for instance, agriculture, fishing, mining, forestry, trapping, power production, manufactures, construction, and custom and repair. These are distinguished from such activities as transportation, merchandising, and personal and professional services which, admittedly, are also productive in the broad economic sense. The custom and repair group is included since its function is to renew and preserve the value of the materials originally created by the other group.

Net production is defined as the value left in producers' hands after the elimination of the cost of materials, fuel and purchased electricity and supplies consumed in the pro-

Sorting Salmon in the Hold of a Collector Boat.—The dedication of the 1942 catch of red salmon to Britain was followed by the largest salmon run on record.

Courtesy, Department of Fisheries

cess of production. Net production is, therefore, a much better criterion of the value of an industry to the community in which it operates than gross production.

The total net output of the nine main productive industries was $3,824,000,000 as compared with $3,241,000,000 in 1939. While war demand was the main stimulant, the increase was well distributed throughout the field of production with the manufacturing industries recording the greatest absolute advance.

Production in agriculture, the leading industry in the primary group, rose by 7·1 p.c. The output of the forestry group recorded an expansion of no less than 36·2 p.c. Progress in the mining industry was also very substantial, production rising 13·4 p.c. above the high level of the preceding year. Output of the electric power stations was 9·3 p.c. greater than in 1939. Production in the fisheries group rose 10·8 p.c. and trapping receipts showed a percentage increase of 41·5, being the highest in the group.

With marked advances being recorded by the basic industries of agriculture, forestry and mining, the net value of primary production showed a gain of 13·7 p.c.

As stated above, manufacturing production was the main single factor in Canadian industrial expansion during 1940, showing a gain of 26·9 p.c. over 1939. The totals include some industrial enterprises also listed under "primary industries", but the value of output in the latter is deducted in obtaining the grand total for Canada. The value of output in the construction industry increased by 12·6 p.c. and custom and repair posted an advance of 14·6 p.c. over the preceding year.

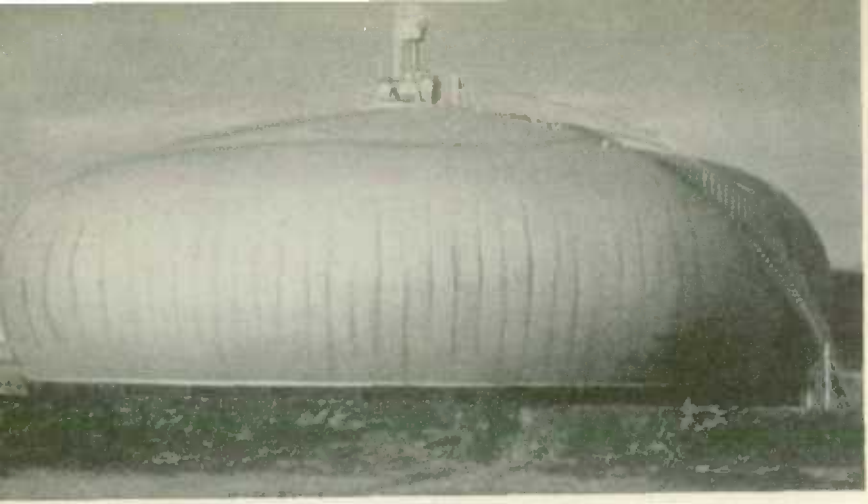
The total value of production in the secondary industries was, therefore, 24·8 p.c. over the aggregate of the preceding year. The proportionate and actual increases alike were much greater than in the primary productive group.

The size of the working force, without distinction as to status, is an excellent measure of the relative importance of the various industries in the economic life of the Dominion. Agriculture stood head and shoulders above any other industry in regard to the number engaged. Manufactures, *n.e.s.*, occupied less than half as many as the main extractive industry. The commodity-producing activities engaged nearly 60 p.c. of the man-power, while the commodity-handling and -facilitating divisions occupied the attention of about 19 p.c. and 21 p.c., respectively.

Value of Production in Canada, by Industries, 1939 and 1940

Industry	1939		1940	
	Gross	Net	Gross	Net
	$	$	$	$
Agriculture	1,204,940,000	826,390,000	1,265,112,000	885,115,000
Forestry	466,032,290	271,723,416	627,365,611	370,121,275
Fisheries	52,883,913	34,378,681	60,053,631	38,106,690
Trapping	7,919,412	7,919,412	11,207,930	11,207,930
Mining	663,342,816	393,232,044	748,344,045	446,080,729
Electric Power	151,880,969	149,863,892	166,228,773	163,780,757
Totals, Primary Production	2,546,999,400	1,683,507,445	2,878,311,990	1,914,412,381
Construction	373,203,680	183,706,338	474,122,778	206,893,992
Custom and Repair	163,259,301	96,652,386	180,126,000	110,745,000
Manufactures	3,474,783,528	1,531,051,901	4,529,173,316	1,942,471,238
Totals, Secondary Production	4,011,246,509	1,811,410,625	5,183,422,094	2,260,110,230
Grand Totals[1]	**5,937,918,043**	**3,241,131,299**	**7,260,597,365**	**3,823,676,973**

[1] **Excludes duplication in "Manufactures" of items included under primary production.**



A Gasoline Storage Tank at Montreal.—This pumpkin-shaped tank holds 3,500,000 gal. and is designed to withstand the immense weight as well as the terrific vapour pressure of highly volatile gasoline. It is welded throughout.

Courtesy, Business Management

Value of Production in Canada, by Provinces, 1939 and 1940

Province	1939		1940	
	Gross	Net	Gross	Net
	$	$	$	$
Prince Edward Island	23,440,331	12,554,392	25,121,038	13,826,491
Nova Scotia	182,992,827	109,739,925	232,102,253	132,038,545
New Brunswick	139,137,627	77,156,799	164,896,487	90,119,421
Quebec	1,593,963,500	841,474,236	1,960,693,108	1,011,051,952
Ontario	2,583,701,052	1,365,101,538	3,237,922,599	1,642,788,599
Manitoba	287,553,175	156,371,495	338,704,815	176,734,411
Saskatchewan	333,182,212	212,101,124	358,173,074	219,966,345
Alberta	338,739,829	209,850,313	398,076,785	234,388,768
British Columbia[1]	455,207,490	256,781,477	544,907,206	302,762,441
Canada	**5,937,918,043**	**3,241,131,299**	**7,260,597,365**	**3,823,676,973**

[1] Includes Yukon and Northwest Territories.

The relative importance of the nine provinces to Canadian production remained substantially the same as in 1939. The position of Ontario and Quebec as the principal producers was rather more than maintained, with Ontario's share in the Dominion's total output rising to nearly 43 p.c. as compared with 42 p.c. in 1939. Quebec's contribution also increased somewhat, standing at 26·4 p.c. British Columbia retained third position with 7·9 p.c., output in this province increasing at exactly the same rate as in Canada as a whole.

A certain relative recession was noted in the Prairie Provinces. Alberta replaced Saskatchewan as the fourth ranking contributor, accounting for 6·1 p.c. of the total production. Saskatchewan's share dropped to 5·8 p.c. and that of Manitoba to 3·6. It should be remembered, however, that absolute increases in production were recorded in all cases.

Small relative change was noted in the contribution of the Maritime Provinces. Nova Scotia's quota was slightly higher at 3·5 p.c. with New Brunswick and Prince Edward Island supplying 2·4 p.c. and 0·4 p.c., respectively, of the Dominion output.

National Income

National income is briefly defined as the net value of commodities produced and services rendered during a given period.

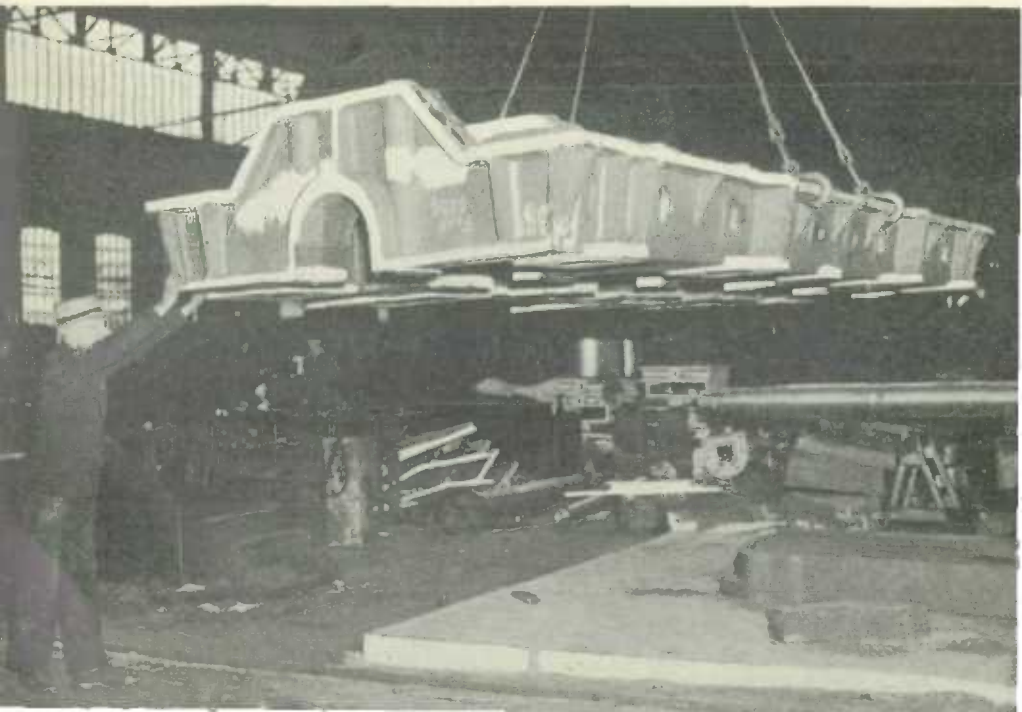
The gross operating revenues of a considerable number of industrial and service groups are known from year to year by means of the surveys of the Bureau of Statistics. It is necessary to deduct, from the gross revenues, the payments to other groups and make provision for the maintenance of plant and equipment by depreciation reserves. The cost of raw materials, fuel and purchased electric power and miscellaneous expenses, mainly taxes, rent and insurance premiums, are the deductions made in this connection. The remainder is the net national product or the national income. Stated differently, national income may be regarded as a comprehensive measure of the net value of production by the economic enterprise.

The national income may also be estimated by adding the savings of enterprises and payments to individuals participating in productive activities. Employees contribute with their labour, receiving salaries and wages. Working proprietors co-operate with labour, management and ownership. Shareholders and owners of bonds receive dividends and interest in return for supplying capital either as speculators or investors. The positive or negative savings of enterprises are also important components.

An alternative approach is based on the fact that the essential purpose of income is for the satisfaction of the needs of the recipient. Account is taken of the flow of commodities and services to consumers at the price paid for the finished product. The ultimate disposal of goods, whether in response to consumers' outlay or the building

Engines for Canada's Ships.—This huge 10-ton casting will encase the shaft that will transmit driving power to the propellers.

Courtesy, Wartime Information



Flour Milling.—A revolution has taken place in flour-milling processes. Flour milled by a longer-extraction process retains more of the valuable vitamin B content of the wheat berry, formerly discarded in the bran and middlings. *Right*: A battery of rollers in a modern flour mill. The miller checks the wheat sample as it enters the rollers. *Below:* Stacks of Canadian flour ready for shipment.

and maintenance of plant and equipment, constitutes the core of the inquiry. The expenditure for services to the individual is added, while the expenditure for the benefit of productive enterprise is excluded. The national income, measured in actual dollars, showed marked fluctuation during the period between the two World Wars. Mainly reflecting currency inflation, the nation income rose from $4,087,000,000 in 1919 to $4,614,000,000 in 1920. The drop to $3,735,000,000 in 1921 marked the pronounced setback of that period. The subsequent advance in economic activity continued for eight years, culminating in 1929 when a total of $5,500,000,000 was reached; this was a maximum for the inter-war years. Largely as a result of the stimulus provided by the war program, the national income of Canada was approximately $6,514,000,000 in 1941 and is tentatively estimated at $7,500,000,000 in the first ten months of 1942, about $1,000,000,000 above the total in the same period of the preceding year.

The relative importance of the income of the various components is a significant phase of any study of the national income. The commodity-producing industries contributed to the national total a yearly average of $1,972,000,000 during the twenty years from 1919 to 1938. Income to the amount of $954,000,000 originated in the transportation and trade divisions. Services, including finance and government, produced an average income of $1,316,000,000 per year.

As income payments to individuals in the form of salaries and wages, dividends, interest, etc., constitute the principal flow of money, the importance of these payments to the economy is readily realized. The total flow of income payments to consumers amounted to an average of about $4,000,000,000 per year during the inter-war period and has been correspondingly greater since 1939. The compensation of employees, including pensions and relief, accounted for nearly 62 p.c. of the total distribution, while less than 14 p.c. was paid in the form of dividends, interest and rents. The share of the working proprietors averaged nearly 25 p.c.

CHAPTER III

Agriculture

The Effects of War on Canadian Agriculture

Three years of war have left a deep imprint on Canadian agriculture. Inevitable disruption of production programs brought about by loss of markets abroad and uncertainties as to the future marked the earlier period of the War. This has been succeeded by readjustments and the present picture is vastly different. Canadian farmers now face the challenge of maximum production coupled with a labour shortage that daily becomes more and more acute.

As the requirements of Britain and her Allies have become better known, the farmers of Canada have been called on for ever-increasing output of certain important food products, notably pork products, cheese and eggs. Wool and flax fibre are in strong demand for military and civilian needs. Deficiencies of oils and fats resulting from the extension of hostilities to the Pacific have placed new responsibilities on Canada to step-up her production of oil-bearing seeds and live-stock products.

With employment at the highest level in Canadian history, the consequent high purchasing power is reflected in a steadily increasing domestic demand for milk, butter, eggs, meats, fruits and vegetables. Added to this, the needs of vast numbers of Army, Air Force and Navy men and women in Canadian training centres, and the requirements for ships stores, have boosted the demand for these foodstuffs to an all-time high point.

It has been no easy task for farmers to tune their activities to war-time demands. Many of the supplies required in production have become restricted in quantity or wholly unavailable. Labour shortages are serious and the rationing of farm machinery has curtailed the degree of mechanized assistance that might otherwise be available to supplement the shrinking man-power. Importation of horse-drawn grain binders, power binders and stationary threshers will not be permitted in 1943. The introduction of a price- and wage-control program has also affected agriculture. Price incentive, which plays so important a part in stimulating production, has been sharply restricted, but Government assistance has relieved the pressure to some extent. Nevertheless, Canadian farmers have contributed a full share toward the stabilization of living costs.

Despite these handicaps the achievements in agricultural production have been remarkable. In the first year of the War, Canada shipped 331,000,000 lb. of bacon as against 291,000,000 lb. asked for by Britain. During the second year Britain contracted for 425,600,000 lb. and this amount was furnished in less than the contract period. For the third year the quantity asked for was 600,000,000 lb. with supplementary contracts for 18,000,000 lb. of pork offals and canned products. A fourth agreement with the British Ministry of Food is in effect for the year 1942-43, which calls for shipments of 675,000,000 lb. of bacon and hams. The agreed price will be about 10 p.c. above that paid under the previous agreement. Although the full 600,000,000 lb. covered by the 1941-42 contract had not been shipped by the end of the contract period, the new price went into effect on Oct. 5, 1942, and will apply to the remaining shipments needed to complete the agreement.

Cultivating Potatoes in Nova Scotia.

Courtesy, National Film Board

"Bacon for Britain" in the Making.

Courtesy, W. E. Whitehead, Macdonald College

To meet the shipments requested by Britain and domestic requirements will require the largest production of hogs in the history of Canada—approximately 8,000,000. While hog production has been substantially advanced in Canada since the outbreak of war, to fulfil the new agreement will necessitate a further increase of about 33 p.c. in Western Canada and about 22 p.c. in Ontario and Quebec, or 28 p.c. for the whole country. Abundant feed supplies will undoubtedly be an important factor in this increased production.

In the case of cheese, the first agreement called for 78,400,000 lb. and shipments totalled 93,000,000 lb. A second agreement for 112,000,000 lb. was exceeded by a comfortable margin. The third contract, which will run to Mar. 31, 1943, calls for 125,000,000 lb. and Britain agreed to take an additional quantity that was available from production during the month of October.

Before the War, egg shipments to Britain ran to little more than 1,000,000 doz. annually. No contracts were made for eggs until April, 1941, when 13,800,000 doz. were asked for. Total contracts for 1942 called for 45,000,000 doz. and, in order to conserve shipping space, all shipments since February of that year have been made in dried form, requiring the installation of the necessary processing machinery.

Important developments have recently taken place in the shipment of fruits and vegetables, mainly in dehydrated or otherwise processed form. Fibre flax production and export have risen sharply.

To give direction and assistance to the farm production effort, a number of Government measures have been taken since the commencement of the War. Loss of export markets complicated the problem of wheat production and inducements were offered for farmers to reduce their wheat acreage and increase their production of coarse grains required by the phenomenal increase in live-stock production. Government assistance in the form of freight cost rebates on western feed grains purchased by feeders in Eastern Canada and British Columbia made possible increased output without unduly raising production cost. Additional assistance was provided in the form of a subsidy on fertilizers. Measures were taken to conserve supplies of materials essential in production, as, for example, tin which finds many important uses in agriculture. Action was taken to regulate the manufacture of farm machinery and equipment, but increases in the production of repair parts should, however, enable farmers to keep their present equipment in good working condition. Supplies of

field and garden seeds were assured and, as a result, no serious shortages have been encountered. Supplies of fertilizers and pesticides have been conserved carefully and have proved adequate for the needs to date.

Direct encouragement by the Government has resulted in farmers increasing their output of a number of farm products. Sheep raising has been stimulated, a program of increased poultry production has produced an encouraging response, and subsidies on butterfat delivered to creameries are resulting in an increased output of butter.

In order that commitments on war accounts might be met, some restrictions on domestic consumption have been made. When a pasture failure and feed shortage threatened the cheese supply in 1941, restrictive orders resulted in the bulk of the season's make being reserved for Britain. To facilitate fulfilment on time of bacon agreements with Britain, the Government appealed to Canadians, on two occasions, to refrain from buying pork so that maximum amounts might be made available for export. Attention was focused on alternative foods that happened to be plentiful and on both occasions the public response was good. Local shortages of beef have occurred in some parts of the country. This situation has resulted in measures to curtail exports of cattle and to stabilize prices and marketings on the domestic market.

Dried Eggs for Britain.—The shipping of whole eggs is costly and wasteful, but dehydrated egg powder has provided a solution for the conservation of shipping space. It will keep for a considerable time and one pound of it is equal to thirty-six fragile eggs. The illustration shows the egg-breaking process, the drying cone in which the transformation of the egg from liquid to powder takes place and the wax-sealed barrels ready for shipment.

Courtesy, Canadian Doughnut Company, Ltd.

To the already rapidly expanding agricultural production the crop season of 1942 gave further impetus when harvests reached new peak levels and bountiful supplies of all feed grains and forages coupled with good pastures proved more than adequate to support the demands of the soaring live-stock production output. The continuation of the freight-assistance policy offers assurance that these feed supplies will be well distributed.

The expansion in practically all lines of agriculture, together with higher prices, has resulted in a substantial improvement in farm cash income. As a result, Canadian farmers now look forward with confidence to the prospect of greater economic returns while realizing that they are making, at the same time, a most important contribution to the cause of victory.

Agricultural Statistics

Values of Agricultural Capital and Production

As shown below the value of agricultural capital reported in 1941 recorded an increase of about 5 p.c. over that of 1940.

Current Value of Agricultural Capital, by Provinces, 1941

Province		Lands and Buildings	Implements and Machinery	Live Stock	Total
		$'000	$'000	$'000	$'000
Prince Edward Island		42,921	5,815	8,970	57,706
Nova Scotia		91,465	7,479	17,028	115,972
New Brunswick		74,097	9,102	18,603	101,802
Quebec		806,575	66,424	151,760	1,024,759
Ontario		1,049,524	116,689	264,802	1,431,015
Manitoba		225,627	47,608	73,314	346,549
Saskatchewan		587,849	116,405	129,663	833,917
Alberta		413,602	89,104	142,500	645,206
British Columbia		91,815	10,089	30,826	132,730
Totals	**1941**	**3,383,475**	**468,715**	**837,466**	**4,689,656**
	1940	**3,321,328**	**462,120**	**698,267**	**4,481,715**
	1939	**3,371,018**	**469,287**	**656,363**	**4,496,668**
	1938	**3,271,970**	**474,990**	**594,132**	**4,341,092**
	1937	**3,634,981**	**478,454**	**607,316**	**4,720,751**

Gross Value of Agricultural Production in Canada, 1937-41

Item	1937	1938	1939	1940	1941
	$'000	$'000	$'000	$'000	$'000
Field crops	556,222	550,069	685,839	676,682	647,850
Farm animals	227,091	197,600	218,385	268,679	335,945
Wool	2,049	1,565	1,827	2,703	3,263
Milk production	144,860	154,550	145,883	164,132	206,543
Fruits and vegetables	54,354	57,095	56,804	58,463	69,410
Poultry and eggs	56,980	58,933	60,829	67,135	76,428
Fur farming	6,802	6,476	5,793	6,143	6,363
Maple products	2,245	3,850	3,444	4,210	3,561
Tobacco	17,140	20,270	19,444	10,470	18,464
Fibre flax	332	519	1,249	1,727	3,118
Clover and grass seed	2,344	2,996	2,827	2,184	5,165
Honey	2,164	3,057	2,616	2,584	3,276
Totals	**1,072,583**	**1,056,980**	**1,204,940**	**1,265,112**	**1,379,386**

The gross value of agricultural production includes the value of all crops, live stock and animal products produced on farms in Canada. In 1941 the gross value of agricultural production was estimated at $1,379,386,000 which was 9 p.c. higher than in 1940.

Field Crops

Acreage.—In contrast to acreage trend during the First World War, when expansion in the wheat area was desired and obtained, the policy in the present conflict has been designed to reduce the acreage seeded to wheat and increase the

Field Crops of Canada, 1941 and 1942

Crop	4th Estimate 1941 Crops[1]			2nd Estimate 1942 Crops		
	Area	Production	Value	Area	Production	Value[2]
	acres	bu.	$	acres	bu.	$
Wheat	21,882,200	311,825,000	170,315,000	21,586,500	607,688,000	410,746,000
Oats	12,265,800	305,575,000	125,920,000	13,782,300	651,976,000	240,537,000
Barley	5,304,000	110,566,000	47,651,000	6,972,900	259,234,000	116,414,000
Rye	960,400	11,703,000	5,276,000	1,337,700	24,722,000	9,968,000
Peas	80,200	1,319,000	2,872,000	90,100	1,678,000	3,568,000
Beans	113,000	1,897,100	3,471,000	80,400	1,585,000	3,057,000
Buckwheat	238,100	4,788,200	3,313,000	239,800	5,310,000	3,669,000
Mixed grains	1,552,800	48,658,000	26,116,000	1,680,700	68,365,000	36,014,000
Flaxseed	996,500	6,566,000	8,268,000	1,492,200	14,991,000	29,634,000
Corn for husking	320,400	13,362,000	9,645,000	358,000	14,372,000	10,530,000
		cwt.			cwt.	
Potatoes	507,100	39,052,000	48,274,000	505,900	42,097,000	57,469,000
Turnips, etc.	164,700	31,354,000	14,712,000	157,800	32,908,000	16,661,000
		tons			tons	
Hay and clover	9,559,000	12,632,000	158,723,000	9,707,000	16,942,000	176,634,000
Alfalfa	1,270,400	2,726,800	29,989,000	1,439,800	3,735,000	34,368,000
Fodder corn	470,800	4,153,800	16,287,000	484,800	4,491,000	18,657,000
Grain hay	1,032,300	1,371,000	7,139,000	830,000	1,668,000	7,846,000
Sugar beets	70,700	711,700	5,330,000	63,300	704,200	4,359,000

[1] Production provisionally revised to conform to 1941 Census acreages. [2] First estimate of values.

Harvesting the Hay Crop on a Typical Farm in Eastern Canada.

Courtesy, Department of Agriculture

Threshing in Western Canada.—The combine, despite its economic advantages, has not by any means displaced the threshing machine.

Courtesy, Canadian Pacific Railway

production of other crops needed more urgently in war-time programs concerned with the production of bacon, eggs, cheese and many other commodities required by the United Kingdom. Bonus payments by the Federal Government, together with the co-operative attitude of Canadian farmers, have produced the desired results, and wheat acreage in the Prairie Provinces in 1942 was at its lowest level since 1925, while the area sown to oats, barley and flaxseed showed marked expansion.

Wheat and Other Grains.—The peak of wheat acreage was reached in 1940, when 28,726,000 acres were seeded and 540,000,000 bu. were harvested—the second largest wheat crop in the history of the Dominion. Following as it did the crop of 520,600,000 bushels harvested in 1939, surplus wheat reached unusually high levels in 1940. As a result, agricultural policy in 1941 and again in 1942 was designed to curtail wheat acreage and increase the production of other grains. Almost 7,000,000 acres were taken out of wheat in 1941, and a further small reduction took place in 1942, but a very favourable growing season in 1942 produced a crop of 607,700,000 bu. or 41,000,000 bu. more than had ever been produced in a single year.

Production, Imports and Exports of Wheat for Canada, 1929-42

NOTE.—Wheat flour has been converted into bushels of wheat at the uniform average rate of 4⅘ bu. to the barrel of 196 lb. of flour.

Year	Production	Imports of Wheat and Flour[1]	Exports of Wheat and Flour[1]	Year	Production	Imports of Wheat and Flour[1]	Exports of Wheat and Flour[1]
	'000 bu.	bu.	bu.		'000 bu.	bu.	bu.
1929...	304,520	1,374,726	186,267,210	1936..	219,218	403,396	195,223,653
1930...	420,672	244,221	258,693,887	1937..	180,210	6,138,819	92,957,047
1931...	321,325	216,328	207,029,555	1938..	360,010	1,891,177	166,959,447
1932...	443,061	173,014	264,304,327	1939..	520,623	444,368	207,896,515
1933...	281,892	413,165	194,779,875	1940..	540,190	122,798	224,267,254
1934...	275,849	896,674	165,751,305	1941..	311,825[2]	[3]	[3]
1935...	281,935	291,510	254,424,775	1942..	607,688[2]	[3]	[3]

[1] Imports and exports are for the years ended July 31, 1930 to 1941. [2] Subject to revision. [3] Publication discontinued for security reasons.

In the recent switch from wheat to other grains increases in acreage have been most marked in the cases of flaxseed, barley and oats. Comparing the acreage sown to these crops in 1940 with the acreage planted in 1942, the flaxseed area increased 303 p.c., barley 77 p.c. and oats about 40 p.c. The 1942 crops of oats and barley were of record size, while the flaxseed crop was the largest in 30 years.

The value of wheat crops has been affected since 1935 by the operation of the Canadian Wheat Board. Fixed minimum prices have been set each year and producers delivering wheat to the Board have been given participation certificates that entitle them to share in profits arising from the sale of this wheat by the Board. The initial price for No. 1 Northern, basis in store Fort William-Port Arthur was 87½ cents per bushel in the three crop years 1935-36 to 1937-38, inclusive, but in 1938-39 it was reduced to 80 cents and in the following three years 1939-40 to 1941-42, inclusive, it was 70 cents. It should be noted, however, that in the past two crop years farm storage payments were made at the rate of 1/45th of a cent per bushel per day to growers who stored their wheat on the farm for a certain time before delivery to the Board.

On Aug. 1, 1942, the initial price of wheat was raised to 90 cents per bushel, but farm storage payments had not been authorized for the crop year 1942-43. On the same date minimum prices became effective for oats and barley and a fixed price of $2·25 for No. 1 Canada Western flaxseed, basis in store Fort William and Port Arthur, and for No. 1 Canada Eastern, basis domestic freight rates in store Montreal. At the same time ceiling prices established by the Wartime Prices and Trade Board were in effect beginning early in December, 1941.

A field of turnips ready for harvesting and two specimens trimmed and waxed as they will ultimately reach the consumer.

Courtesy, Farmer's Magazine

Grain Storage Facilities

Although Canada had on Dec. 1, 1939, grain elevators of all types with a licensed capacity of 423,000,000 bu., this was found in the succeeding years to be inadequate for the handling of accumulated surplus grain, chiefly wheat, and by Dec. 1, 1940, the addition of temporary and special annexes, as well as permanent annexes to elevators proper, brought the storage capacity up to approximately 509,000,000 bu. This was not the end of the building program, however, for on Dec. 1, 1941, the licensed storage capacity was up to approximately 600,000,000 bu. A large part of the increase in 1941 came from the erection of large temporary buildings with a licensed capacity of over 52,000,000 bu. at Fort William and Port Arthur. A further increase in storage facilities took place in 1942, principally at country points in Western Canada.

A feature of grain movement during the war years 1940 to 1942 has been the heavy shipments of grain by rail. This resulted from scarcity of lake tonnage, much of which had been taken from the grain trade and switched to ore-carrying on the upper lakes, while a large number of small canal vessels that formerly plied between Lake Erie and St. Lawrence ports were taken over for other purposes. War-time developments resulted also in curtailment of movement from Pacific Coast ports and Churchill, so that most of the shipments of western grain have been routed through Fort William and Port Arthur during the past three years.

Live Stock

The live-stock industry of Canada has been expanded rapidly in recent years to meet the increased demands for meat and other live-stock products arising out of the War. The most spectacular increase has occurred in the case of hogs; the number on farms at June 1, 1942, reached 7,100,000 head, an increase of 1,000,000 head over the 1941 figure and more than double the number on farms at June 1, 1938. As a

Sheep on a Saskatchewan Ranch.
Courtesy, Canadian National Railways

A Farm Scene in Gatineau County, Quebec.

result of this great increase in hog numbers, it has been possible for Canada to increase her exports of pork products to the United Kingdom very considerably and at the same time to supply larger quantities for the Canadian market.

Milk production has also expanded rapidly (see pp. 75 to 76) although several years are required to bring about any material increase in the numbers of cows on farms. The higher prices of dairy products have resulted in better feeding practices and the excellent pasture conditions that prevailed in almost all parts of Canada in 1942 was an important factor contributing to the increased production. In view of the fact that the requirements of the United Kingdom centred largely around cheese and concentrated milk products, production of these items has been stimulated to some extent at the expense of butter. Domestic requirements for fluid milk have advanced materially as a result of the greater consumer purchasing power.

Strenuous efforts are being made to increase the numbers of sheep on farms in order that Canada may supply a greater proportion of her total wool requirements. As in the case of milk cows, however, several years are required to bring about an effective increase in the numbers of sheep on farms. While the number of horses on farms has been tending to decline over the past several years, market prices have recently improved considerably and some expansion in this branch of the livestock industry may be anticipated.

Marketings.—Commercial marketings of cattle in 1941 amounted to 1,344,794 head, of which 875,542 head were sold through the stockyards, 374,472 head were sold direct to packing plants, and 94,780 head were sold direct for export. Total commercial marketings in 1940 were 1,209,964 cattle. Calf marketings in 1941 were 828,639 head.

Hog marketings in 1941 amounted to 6,216,207, compared with 5,457,000 head in 1940. This sharp expansion in hog marketings has been in response to the increased demands of the United Kingdom for Canadian pork products. A further expansion occurred in 1942.

Total sheep and lamb marketings were reported at 829,666 head in 1941, and 772,000 in 1940. About one-half the sheep are sold through public stockyards.

Clydesdale Colts.
Courtesy, Family Herald and Weekly Star

The greater proportion of horses marketed are transferred from one farm to another and thus do not appear on the stockyard records. There has been a very considerable increase in recent years in the number of horses shipped eastward through the St. Boniface yards at Winnipeg.

Special Crops

Tobacco.—War has checked the rapid expansion in the tobacco industry, which began in 1926 and reached its peak in 1939 when a crop of 107,703,400 lb. with a farm

value of $19,443,800 was harvested. The expansion was due almost entirely to the great increase in the production of flue-cured tobacco, particularly in Ontario. Exports, too, had been increasing and in the year 1939 amounted to 32,200,000 lb. Exports were largely of the flue-cured type and approximately 97 p.c. went to the United Kingdom. Following the outbreak of hostilities in September, 1939, the United Kingdom market was virtually closed to Canadian tobacco and, with domestic stocks of unmanufactured leaf at record levels, the situation became so acute that acreage restrictions were put into effect and production reduced to 61,136,100 lb. the following year. These restrictions were relaxed somewhat in 1941 on account of the sharp increase in the domestic demand for unmanufactured tobacco and a slight improvement in the export situation. The full 1939 acreage allotments for flue-cured and burley tobacco were restored in 1942 when the area was increased to 77,480 acres and a crop estimated at 87,855,000 lb. was harvested. This compares with the 1941 crop of 91,160,000 lb. which had a farm value of $18,613,200.

There has been a decided expansion in the amount of domestic leaf taken for manufacture during the past three years. The most substantial rise has been in the flue-cured type where withdrawals for manufacture increased from 30,000,000 lb. for the crop year ended Sept. 30, 1939, to 43,600,000 lb. for the corresponding twelve months ended Sept. 30, 1942. The increase is due to the sharply increased consumption of cigarettes in Canada, supplemented by the tremendous volume of ships' stores and exports to the Armed Forces abroad which, on a green weight basis, now total about 6,000,000 lb. per year.

Sugar Beets.—With cane sugar rationed, increased attention has been given to the sugar-beet industry, which is centred in southwestern Ontario and southern Alberta. A new refinery was opened at Winnipeg, Man., in 1940, and that year the acreage was increased to 82,270 acres. This compares with an annual average of 51,300 acres seeded during the previous five years. Unfavourable weather conditions and the uncertainty of the labour supply reduced the area to 63,300 acres in 1942. The output of refined beetroot sugar amounted to 201,677,900 lb. in 1941 with a value at the refinery of $10,807,428.

Maple Products.—The 1942 crop amounted to 2,876,900 gal. of syrup and 3,737,200 lb. of sugar, a total of 3,250,600 gal. expressed as maple syrup. Of the total production, 2,626,200 gal. or 81 p.c. was produced in Quebec, 18 p.c. in Ontario and the remainder in the Maritime Provinces. In response to heavy demand from domestic and export markets, the 1942 crop sold readily at prices sharply higher than in the previous year and, as a result, the gross farm value of the 1942 crop totalled $6,716,300, as compared with a crop valued at $3,561,200 in 1941.

Honey.—Production in 1941 totalled 27,472,100 lb., of which 12,000,000 lb. or 44 p.c. was produced in Ontario. The crop had a farm value of $3,151,200. While the 1941 crop was slightly above the average in size, the 1942 crop was considerably smaller, a preliminary estimate indicating a production of only 23,205,900 lb. The big decrease was in Ontario where only 7,800,000 lb. of honey was produced. Prior to the War, about 15 p.c. of the crop was normally exported to the United Kingdom market. Shortly after war was declared, honey was placed on the luxury list by the British Government and import permits for Canadian honey were refused. When these restrictions were removed, prices rose sharply on both the domestic and the United Kingdom markets. Since June, 1940, imports of honey into the United Kingdom have been on a quota basis, Canada's share of these annual quotas being approximately 4,500,000 lb.

Native Products Supplement Imported Sugar

War-time conditions brought about by shipping difficulties have necessitated the rationing of sugar but Canada is fortunately able to supplement supplies of cane sugar from abroad by the domestic production of maple sugar, beet sugar and honey. The illustration shows newly collected sap being strained at the sugar-house, sugar-beet cultivation and beehives on an Ontario farm.

Courtesy, Canadian National Railways, the Family Herald and Weekly Star *and the Ontario Travel and Publicity Bureau*

Fibre Flax.—War has again stimulated interest in the production of fibre flax with the result that there has been considerable expansion in this industry during the past three years. The area devoted to this crop increased from 10,536 acres in 1939 to 44,467 acres in 1941 and the value of flax products, which include flax fibre, seed, and tow, showed a corresponding increase from $1,249,000 in 1939 to $3,118,000 in 1941. The acreage was increased to 47,070 acres in 1942, and an objective of 75,000 acres has been set for 1943 to meet the expanding requirements of the United Kingdom. This crop should not be confused with flaxseed grown for oil, included under "Field Crops" at p. 70.

Forage Seed Crops.—The marked expansion in live-stock production since the beginning of the War has increased the demand for forage crops, with the result that production was considerably higher in 1941 than in 1940. The 1940 crop totalled 24,767,400 lb. valued at $2,184,200, whereas production in 1941 amounted to 37,778,000 lb. with an estimated value of $5,165,100.

Soybeans.—With imports of essential oils sharply curtailed by the War in the Pacific, interest in the production of soybeans has been stimulated by the rising demand for soybean and its by-products, soybean oil cake and meal. Preliminary census data show a total area of 16,000 acres devoted to soybean in 1941, of which 11,000 acres was located in Ontario. In 1942, the Ontario acreage expanded to 41,490 acres and there was about 6,000 acres grown in Quebec and the western provinces. In view of the favourable prices paid by the Wheat Board for the 1942 crop, further expansion is likely in 1943, particularly in Ontario, Manitoba and British Columbia.

Hops.—The main hop production is in British Columbia where a crop of approximately 1,500,000 lb. is produced annually, with a value of about $500,000.

Vegetables.—The growing of fresh vegetables for market is an important industry in many districts, particularly in the suburban areas. Truck farms located in specially favoured regions provide raw materials for the vegetable-canning industry and cater to the fresh vegetable market.

Dairying

War-Time Regulation and Prices of Dairy Products.—It was recognized in the early stages of the War that dairying would occupy an important place in the agricultural program. Hence, a Supplies Committee (later reorganized as the Agricultural Supplies Board) was immediately formed to stimulate production on Canadian farms. Foreseeing an increased demand for cheese and milk products in Britain, the Dairy Products Board was created in 1940 to control the marketing and export movement of all dairy products. One of the first acts of the Wartime Prices and Trade Board (see p. 24) was to establish maximum prices for domestic cheese in Ontario and Quebec where sales had been restricted from May to October while the export quota was being filled. The maximum price of first-grade cheese at Montreal was set at 25 cents, with reductions of a half cent and one cent, respectively, for second and third grades. Domestic prices immediately moved up to the higher level. Export prices, on the other hand, were 14·4 cents, 15 cents and later 16 cents (including export subsidies) during the production season. With the addition of provincial bonuses and the Dominion quality bonus, producers realized an average of about 28 cents for the first-grade product f.o.b. Montreal. The new price arrangement encouraged production during the winter months and some factories were re-opened after having been closed for the season. Under a new contract made with the British Ministry of Food in 1942, the export price of first-grade cheese at Montreal was advanced to 20 cents. The maximum price of domestic cheese was set at 24 cents for the first grade product (f.o.b. shipping point) and fixed differentials were established between producers, wholesalers and retailers.

Butter prices during the winter of 1941-42 were in close accord with the maximum established during the basic period, Sept. 15 to Oct. 11, 1941. Upward adjustments were provided for on the first of November, January, February and March to cover storage and handling costs. On July 6, 1942, the Board ordered a subsidy of 6 cents a pound on butterfat to be paid to producers for cream used in the manufacture of creamery butter. This increased the butter supply in some sections and encouraged farmers to lay plans for increased production during the winter months. Commencing Dec. 19, 1941, producers of fluid milk were given a subsidy of 30 cents per 100 lb. in districts where no increase had been proclaimed by the provincial authorities since Aug. 1. This subsidy was terminated on May 1, 1942, but under an order issued Aug. 21, producers in specified areas were allowed 25 cents a hundred

which, together with certain price adjustments, represented the equivalent of the 30 cents a hundred previously paid. Producers supplying concentrated milk plants benefited by a subsidy of 40 cents a hundred from December to April.

On Dec. 16, 1942, fluid milk prices to consumers were reduced by 2 cents a quart in all parts of Canada. Butter rationing was introduced on Dec. 21, 1942, limiting the weekly consumption to ½ lb. per person. At the same time the producers' subsidy was increased during the winter months from 6 cents to 10 cents and butter prices were set at, or below, the October level in all provinces with the exception of the Maritimes.

Production of Dairy Products.—The position of the dairy industry at the beginning of the present war may best be judged by comparing the situation with that which existed in 1920, two years after the termination of the War of 1914-18. At that time there were approximately 400,000 fewer cows on farms and the total production of milk, which amounted to less than 11,000,000,000 lb., represented a yearly average of 3,132 lb. per cow. In 1939 production had moved up to more than 16,000,000,000 lb. and the production per cow was 4,168 lb. The expansion that has developed in dairying since the beginning of the present war is revealed in the following table, which shows an increase in the total milk production of 600,000,000 lb. between 1939 and 1941. The preliminary estimate for 1942 is 17,500,000,000 lb.

Dairy Production of Canada, 1939-41

Economic Area	Year	Milk		Products Made from Milk			
		Total Milk Production	Fluid Sales	Butter		Cheddar Cheese	Evaporated Milk
				Creamery	Dairy		
		'000 lb.	'000 lb.	lb.	lb.	lb.	lb.
Maritime Provinces	1939	982,653	162,007	11,606,197	13,636,000	1,017,136	3,347,067
	1940	966,107	159,198	11,784,600	12,738,000	1,311,800	3,214,000
	1941	991,469	168,678	13,712,400	12,400,000	1,454,300	2,483,000
Quebec and Ontario	1939	9,911,655	2,183,363	168,246,067	36,476,000	117,494,901	87,625,449
	1940	9,911,847	2,176,479	160,793,900	34,627,000	132,391,100	102,535,000
	1941	10,123,241	2,244,493	162,805,900	34,704,000	139,533,600	127,075,000
Prairie Provinces	1939	4,712,865	464,707	81,674,203	50,760,000	6,035,017	5,592,238
	1940	4,857,451	477,397	85,393,000	49,244,000	7,653,700	6,794,000
	1941	5,078,506	495,365	103,529,900	44,734,000	7,204,200	8,783,000
British Columbia	1939	539,309	201,438	6,086,079	2,850,000	928,305	20,320,365
	1940	547,672	204,562	6,181,500	2,579,000	750,500	23,000,000
	1941	559,607	210,303	6,061,300	2,500,000	721,200	28,571,000
Totals	**1939**	**16,146,482**	**3,011,515**	**267,612,546**	**103,722,000**	**125,475,359**	**116,885,119**
	1940	**16,283,077**	**3,017,636**	**264,153,000**	**99,188,000**	**142,107,100**	**135,543,000**
	1941	**16,752,823**	**3,118,839**	**286,109,500**	**94,338,000**	**148,913,300**	**166,912,000**

Production of creamery butter in the Prairie Provinces greatly increased in 1941 and a still greater advance is indicated by the preliminary figures for 1942. There was also a considerable increase in the production of cheese in Quebec and Ontario, and the output of evaporated milk registered a substantial advance. The dairy-butter output, which had fallen to about 94,000,000 lb. in 1941, registered sharp declines in 1942, particularly after the subsidy on butterfat was announced. The 1942 creamery-butter make amounted to over 284,000,000 lb. for the whole of Canada; the dairy-butter make is placed at 85,000,000 lb. Fluid milk sales recorded

Ayrshire Cows in the Foothills.--Dairying is assuming an increasingly important place in the economy of Alberta.

Courtesy, The Country Guide and Nor'West Farmer

a significant increase in 1942. During the first ten months sales increased approximately 9 p.c., and the annual estimate for the year has been tentatively placed at 3,400,000,000 lb. The total value of all dairy products in 1941 amounted to $301,000,000, 31 p.c. of which was represented by creamery butter, 8 p.c. by cheddar cheese and 4 p.c. by evaporated milk.

Marketing and Consumption.—Creamery butter is principally consumed in Canada, the exports during the past ten years amounting to only 2 p.c. of the total output. Dairy butter, on the other hand, is consumed on farms or sold to householders and dealers in adjacent towns and villages. Exports of cheese during the ten-year period 1929-38 represented 67·5 p.c. of the total production. In 1939 exports amounted to almost 91,000,000 lb.; in 1940 the export quota was placed at 78,000,000 lb.; in 1941 it was raised to 112,000,000 lb.; and in 1942 to 125,000,000 lb. Actual shipments, however, have greatly exceeded these quotas.

The consumption of butter, as indicated by domestic disappearance figures, averaged 32·35 lb. in 1941 as against 23·81 lb. in 1920. During 1942 there was a great increase in domestic disappearance. Up to the end of October the total butter disappearance, both creamery and dairy, advanced 5·5 p.c. over that shown for the same period in 1941. The estimated disappearance (including both creamery and dairy) is placed at 391,000,000 lb. for the year, which represents 34 lb. per capita. Canadians are not heavy consumers of cheese, but it is interesting to observe that the per capita consumption moved up from 3·38 lb. in 1940 to 4·26 lb. in 1941. The daily consumption of milk and cream expressed as milk was 0·86 pint per capita in 1941 as compared with 0·74 pint in 1920. It is estimated that the fluid milk sold and consumed on farms in 1942 was approximately 5,000,000,000 lb., representing a per capita consumption of 0·90 pint.

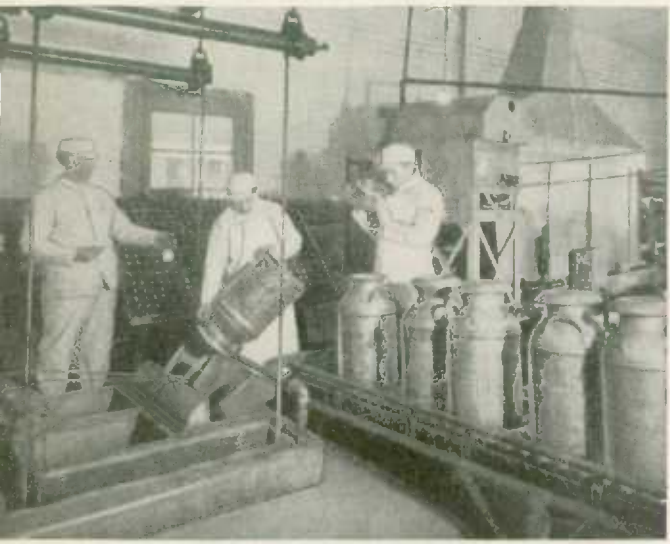
Income.—Dairy farmers have substantially increased their income from the sale of dairy products during the past few years. In 1930 it amounted to $105,600,000, representing 16·85 p.c. of the total farm income. In 1941 the figure had risen to approximately $165,399,000 or 18·87 p.c. of the farm income. With the increases that have taken place in the prices of dairy products in 1942 a substantial advance

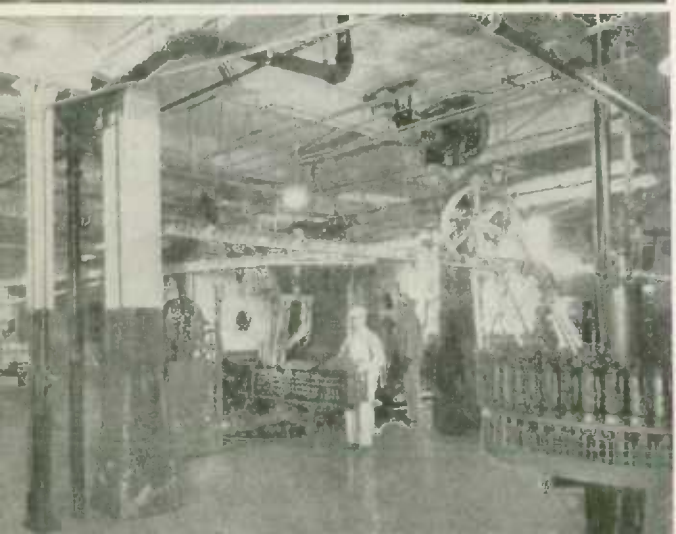
in income has occurred. For the first nine months it amounted to $172,000,000 and the figures for the entire year promise to show a substantial gain in the proportion of dairy income to total farm income.

Poultry and Eggs

Poultry farming has expanded considerably during the past ten years, and in response to the war-time agricultural program, an unprecedented development took place in 1942. The production of eggs has shown the most noticeable increase, but the production of poultry meat has also been given a more important place in general farming. This was caused to some extent by a shortage of other meat products in 1942; so that consumption was greatly increased and farmers found a ready sale for their products.

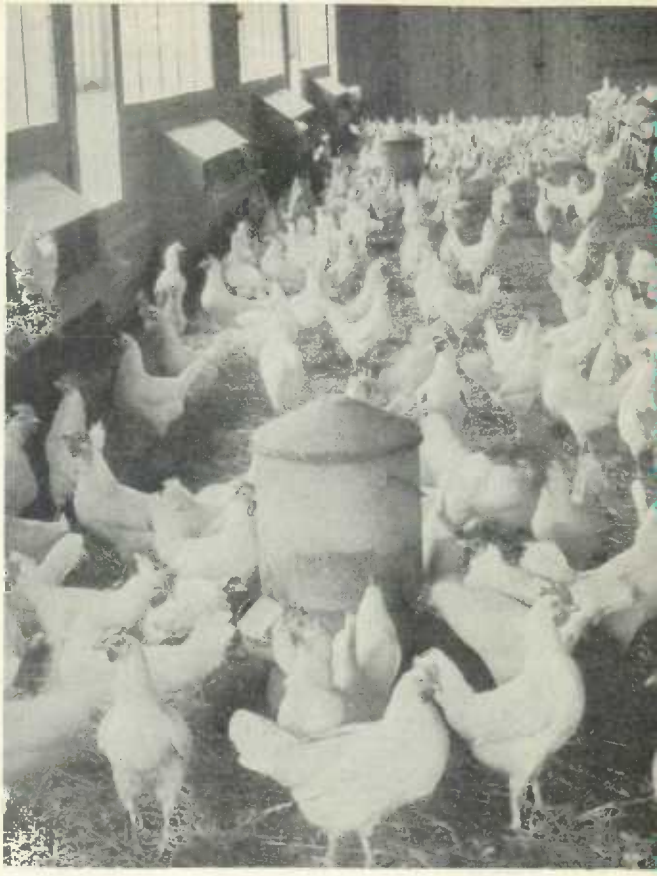
The population of hens and chickens at June 1, 1942, was estimated at approximately 68,000,000. Turkeys numbered approximately 4,200,000, geese 687,000 and ducks 806,300. During the year 1942, the production of farm eggs has been tentatively estimated at 280,000,000 doz. as compared with 244,154,000 doz. in 1941. This advance in the output of farm eggs was achieved by a considerable increase in the egg production per hen; also by the use of a greater number of hens for laying purposes. The value of all poultry in 1941 was $66,513,000 and the value of production of farm eggs was estimated at $53,000,000. The domestic disappearance of poultry meat was approximately 20 lb. per





Concentrated milk is an important war-time food product. Aside from the increasing domestic use in its varied forms, large quantities of dried whole milk, which is largely comparable to fresh milk when reconstituted with water and chilled, are being sent to Britain and to Canadian and British prisoners of war in Europe. *Top:* Milk being tested and weighed as it comes into the plant. *Bottom:* After pasteurizing, the milk is condensed, filled into cans and sterilized.

Courtesy, Family Herald and Weekly Star



White Leghorns.—Hens kept inside, properly housed and properly fed during the winter months, produce more and better-quality eggs.

Courtesy, Department of Agriculture

capita, of which 17·36 lb. consisted of hens and chickens. During the war period there has been a marked increase in the exports of eggs to Great Britain and the demand for Canadian eggs and egg products promises to offer further encouragement to the egg and poultry industry.

Fruit Growing

The preliminary estimates of fruit production in 1942 indicate that, while the tree fruit and grape crops were substantially larger than in 1941, the harvest of other fruit crops was somewhat smaller. The estimates of the 1942 crops followed by five-year (1936-40) averages are: apples, 4,039,400 bbl. (4,813,800 bbl.); pears, 573,100 bu. (539,200 bu.); plums and prunes, 343,000 bu. (215,700 bu.); peaches, 989,800 bu. (703,300 bu.); apricots, 89,200 bu. (46,400 bu.); cherries, 306,200 bu. (186,000 bu.); strawberries, 16,330,800 qt. (24,347,500 qt.); raspberries, 8,257,900 qt. (9,617,600 qt.); loganberries, 1,706,400 lb. (1,911,700 lb.); grapes, 77,703,000 lb. (44,319,300 lb.).

Marketings.—The United States has agreed to accept up to a total of 800,000 boxes of British Columbia apples, distributed over the eight-month period September, 1942, to April, 1943. This reverses the position in the 1941-42 season when some 11,000 bu. were exported to the United States, while the imports into Canada amounted to 375,000 bu. In addition to apples, a considerable volume of peaches and grapes was shipped to the United States during the 1941-42 season.

In 1942 the Dominion Government again entered into agreements with the Provincial Marketing Boards in Nova Scotia and British Columbia to assist in the marketing of the apple crop. The current agreement with Nova Scotia calls for the

The strawberry is Canada's second most important commercial fruit crop.

Grapes hold third place in value of Ontario's fruit crops. They are the basis of the native wine industry and are grown mainly in the Niagara district.

Courtesy, Farmer's Magazine

purchase of up to 16,440,000 lb. of dried apples, which is the equivalent of 1,200,000 bbl. of fresh fruit. In addition, growers will receive $2 for each old tree or bearing tree of an undesirable variety that they remove. The Government is assisting in the marketing of up to 4,750,000 boxes of fresh British Columbia apples by assuring minimum prices for both wrapped and unwrapped fruit. The Government has also contracted to purchase 2,240,000 lb. of evaporated apples.

Provincial Assistance to Agriculture

Each of the nine provinces, under Sect. 95 of the B.N.A. Act, has its Department of Agriculture, through which is carried on educational and extension work to assist farmers. Agricultural colleges maintained by the provinces are: the Nova Scotia Agricultural College at Truro, the Ontario Agricultural and the Ontario Veterinary Colleges at Guelph, and the Manitoba Agricultural College at Winnipeg. Three agricultural colleges in Quebec are assisted by the Provincial Government, while faculties of agriculture are found in the provincial universities of Saskatchewan, Alberta and British Columbia.

CHAPTER IV

Forest Resources

Canada has 781,000,000 acres of forested land comprising more than 35 p.c. of the total land area. By way of comparison, only about 16 p.c. of the total land area is considered to be of use for agriculture, and only 6 p.c. is now used for field crops or pasture. It is thought that perhaps 164,000,000 acres now forested may have agricultural potentialities, but the most productive use to which about 617,000,000 acres can be devoted is the growing of forests. Not all of this forested area is capable of producing wood for commercial purposes, about 288,000,000 acres being situated at high altitudes, on poorly drained muskegs, or on other unfavourable sites that preclude profitable timber growth or industrial utilization. These 'unproductive' forests, however, have important influences on the climate and on the control of water supplies; they provide habitats for wild life, wood for fuel and building material for use of local inhabitants.

The total stand of timber of merchantable size is estimated to be 313,000,000,000 cu. ft. of which 212,000,000,000 is considered accessible. Of the accessible timber about one-quarter (252,000,000,000 bd. ft.) is large enough for saw material and three-quarters (1,500,000,000 cords) is suitable for pulpwood, fuel-wood, posts, mining timber, etc. Much of this smaller material will attain saw-timber size if allowed to grow another 30 to 50 years, but there are some stands large enough for pulpwood that cannot be expected to produce sawlogs because of adverse site conditions.

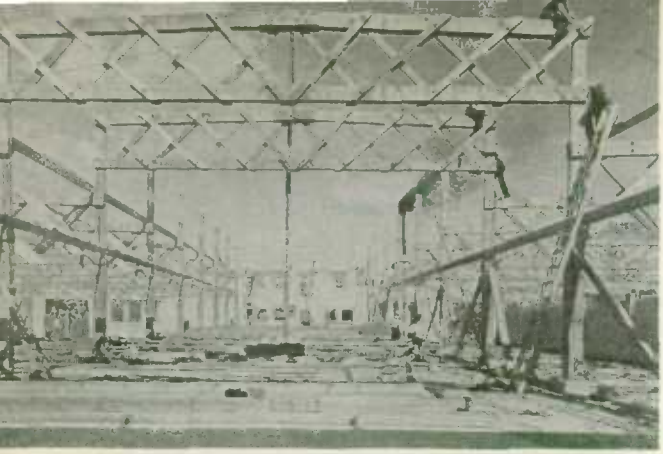
During the ten years 1931-40, about 2,550,000,000 cu. ft. of standing timber was cut for use each year and about 400,000,000 cu. ft. was destroyed by fire. Another 700,000,000 cu. ft. was destroyed by insects, fungi, windfall, and other agencies, making a total annual depletion during the period of 3,650,000,000 cu. ft.

Forests, however, are capable of reproduction and growth. Most of the depletion takes place on the accessible portions of the forests and replacement on these areas requires an average annual growth of about 14 cu. ft. per acre. It is questionable if such a rate is being maintained but, if improved methods of forest management are introduced, it could be not only achieved but exceeded. An essential prerequisite to the introduction of better management is the establishment of more efficient protection against the ravages of forest fires, injurious insects, and other enemies.

Over 130 different tree species grow to commercial size in Canada. Only 33 of these are coniferous but they constitute 75 p.c. of the standing timber and supply about 95 p.c. of the wood used in the manufacture of sawn lumber and wood-pulp.

The Utilization of Wood in War-Time

Since the outbreak of war Canadian forests and forest industries have supplied the major part of the requirements of the United Kingdom and have replaced supplies to other countries formerly secured from northern Europe. The external trade in forest products has provided a large part of the foreign exchange needed for the purchase of munitions in the United States. Domestic consumption of lumber has also increased enormously, not only directly, but as a substitute for other materials required for war purposes. Owing to these increased demands, forest production in Canada at present is limited only by the scarcity of efficient labour in woods and mills and the restriction of transportation facilities.



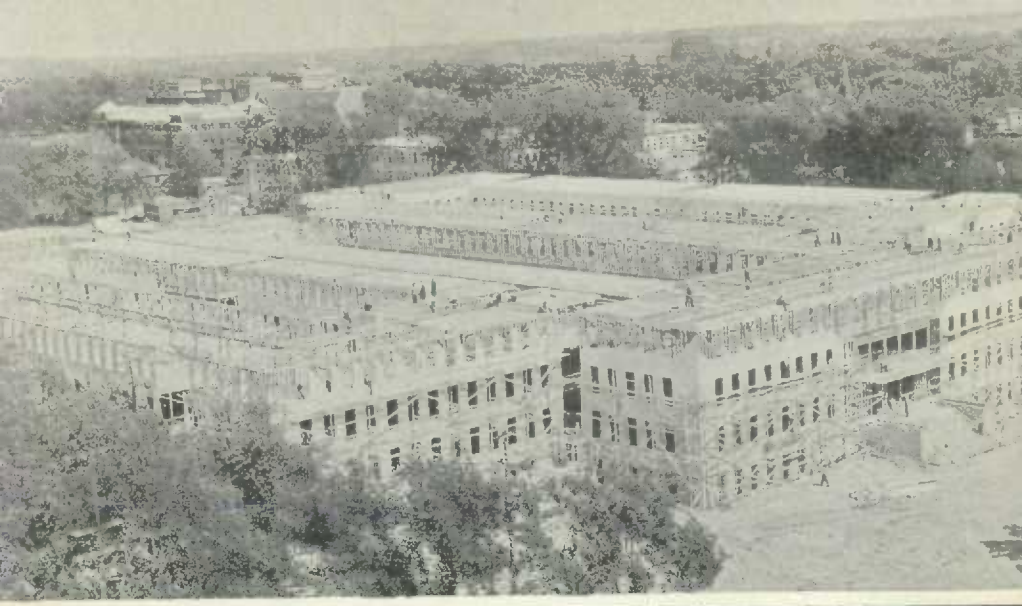
WOOD REPLACES METAL ON LAND, ON SEA AND IN THE AIR

Top left: A wooden roof truss of B.C. fir and western hemlock. *Top right:* The Navy Building, Ottawa, the largest wooden structure of its kind in Canada, under construction.

Centre left: Screwing oak pad pieces to the frame (5-ply wood sawn to shape) of a Fairmile. *Centre right:* (1) A creosoted timber bridge of a type commonly found on rural highways; (2) A sketch of a Fairmile in action; (3) A shaping machine for making wooden airscrews for the R.C.A.F.—the upper propeller blade is the master pattern which, when followed by the upper arm of the machine, gives an exact and corresponding direction to the lower shaping arm.

Bottom left: A Fairmile ready for launching at a Great Lakes shipyard. *Bottom right:* (1) An Anson bomber nose built of plywood. (2) A paper-thin sheet of veneer to be used in constructing plywood, being peeled from a log on a rotary lathe.

Courtesy, Timber of Canada; Royal Canadian Navy; Wartime Information; Canadian Industries Limited; and Engineering and Contract Record

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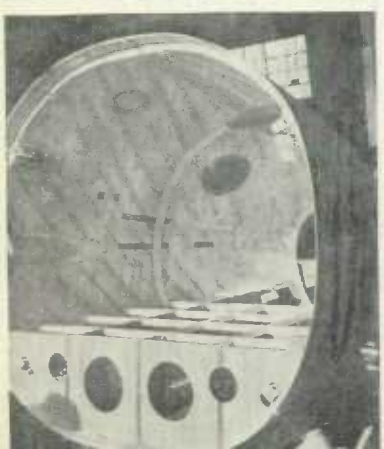
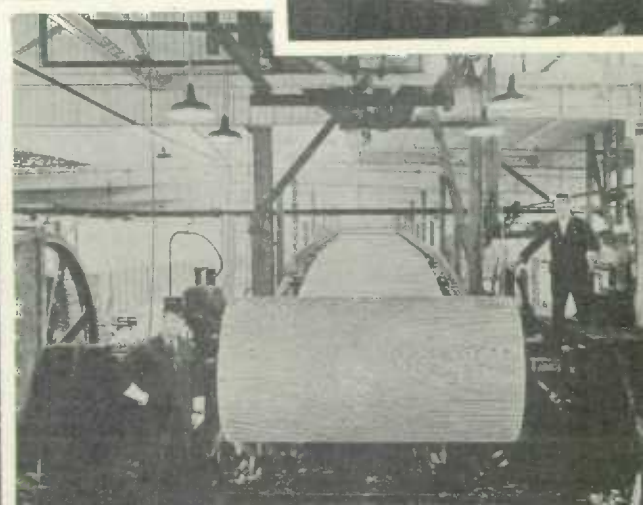


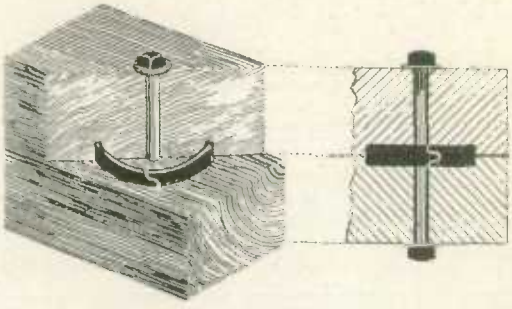


During the later pre-war years there was a noticeable tendency toward the substitution of metal for wood. In many cases this was justified by certain disadvantages of wood as compared with metal. Prominent among these were its tendency to split, the difficulty of making strong joints between its surfaces, its tendency to warp and swell when exposed to moisture, its susceptibility to fungus and insect attack and its inflammability. Many of these disadvantages were gradually being overcome before the War but the increased demand for metal for munitions has stimulated invention and accelerated new developments.

Plywood construction (the manufacture of plywood dates back over four thousand years) overcomes the tendency of wood to warp and split, since the gluing together of the layers of veneer, each with its grain at right angles to its neighbour, counteracts these faults, but adhesives used in the past brought discredit to this form of construction. The perfection of synthetic resin glues has solved the problem and results in a light, strong, tough material that can be made in sheets of almost any required dimensions, either flat or assembled over moulds with complicated curved surfaces. The resulting structure maintains its shape and withstands moisture, fungus and insect attack almost indefinitely. Plywood can now be used as a substitute for lumber in exposed situations for building construction and other purposes. In the building of ships and boats and in the manufacture of certain parts of aircraft, watertight tanks and drums, freight-car siding, truck bodies, cabinetwork, refrigerators, etc., its use releases large quantities of steel, aluminium and other materials, which had threatened to replace it.

Glued laminated construction, using layers of wood thicker than veneer, has also been in use for many years in cabinetwork, where it reduces splitting, warping and swelling. It also permits (for the unseen cores and crossbanding) the use of cheaper wood than that used for the face veneer. These built-up products, however, were limited in use to protected situations, pending the perfection of waterproof glues. Glued laminated construction is now being used for aircraft propellers, truck and freight-car frames, etc., and, in still greater volume, in built-up beams of large dimensions, replacing structural steel. Such beams have a high resistance to moisture, decay and fire and can be quickly and easily constructed.

Next to synthetic resin glue, the most important development in recent years has been the timber connector. Bolted joints, quite commonly used in structural woodwork, were weaker than the connected members. Without going into technical details it can be said that with these connectors the strength of a joint can be increased up to 60 or even 100 p.c. of the strength of the members connected thereby. This results in: a saving of a large part of the metal formerly used to strengthen these joints; the use of timber of smaller dimensions; and the possibility of prefabrication with a decided saving in cost, time and labour. This form of construction releases structural steel for more exacting uses.



New Type of Connector for Timber Joints.

Among other developments that tend to widen the field of wood utilization are the speeding up of seasoning and improvements in methods of wood preservation and fire-retarding treatment. Wood can now be used to advantage for pipe lines, culverts, drains, air-raid shelters and in other situations exposed to moisture.

The chemical use of wood, not only in the manufacture of pulp, paper and cellulose products has also increased with the pressure of necessity. The age-old art of charcoal burning, for one example, has been revived and improved to provide not only fuel but producer-gas for internal combustion engines in trucks and even passenger motor-cars, a method of conserving gasoline that has been in widespread use in Europe for many years.

While some of these changes may be only temporary expedients to meet war conditions, there is no doubt that many of them will become permanent and that still other uses will be found for wood as a raw material.

Operations in the Woods

In Eastern Canada logging operations are usually carried on by the mill owners or licensees of timbered lands, often through the medium of contractors, subcontractors, and jobbers. A considerable quantity of lumber is sawn by custom sawmills or small mills purchasing logs from farmers. In British Columbia about one-half the logging is carried on by mill owners and the remainder by separate logging companies who cut and sell logs on the market. In many cases, mill operators are not limit-holders but buy their supplies of raw material from logging concerns.

Values of the Products of Woods Operations, by Products, 1936-40

Products	1936	1937	1938	1939	1940
	$	$	$	$	$
Logs and bolts	44,827,957	58,004,070	52,759,660	55,685,197	71,817,471
Pulpwood	48,680,200	63,057,205	53,761,999	58,302,668	74,347,132
Firewood	32,167,410	32,457,629	32,740,566	33,058,240	33,297,756
Hewn railway ties	3,190,052	3,129,207	2,222,509	2,048,186	1,788,001
Poles	1,563,681	2,455,345	2,824,512	2,940,361	2,691,107
Round mining timber	1,102,255	1,262,658	1,297,993	1,461,507	5,707,677
Fence posts	1,008,178	992,610	978,679	1,111,883	999,934
Wood for distillation	274,077	309,892	298,110	289,230	518,204
Fence rails	273,282	262,160	264,480	267,437	270,320
Miscellaneous products	1,717,136	1,319,111	1,117,349	2,582,689	3,130,273
Totals	**134,804,228**	**163,249,887**	**148,265,857**	**157,747,398**	**194,567,875**

The Lumber Industry

Except in the Maritime Provinces, 90 p.c. of the forest land is still the property of the Crown, the lumbermen having been granted cutting rights only. This land is administered by the various provincial departments. Conifers usually form about 95 p.c. of the total cut of all kinds of wood, only 5 p.c. being deciduous-leaved trees or hardwoods. Douglas fir is the most important kind of lumber sawn, and is produced almost entirely in British Columbia. Spruce is sawn in every province and comes second, with white pine, hemlock, cedar, and yellow birch next in order of importance.

The industry includes products of: sawmills; shingle, tie, lath, shook, stave, heading and hoop mills; and mills for the cutting-up and barking of pulpwood. Sawn lumber produced in 1940 amounted to 4,629,052 M ft. valued at $105,991,217. Shingles numbered 3,823,251 squares at $9,597,497, sawn ties 4,985,209 at $2,464,427, and lath 216,465 M at $688,167. The gross value of production for the industry as a whole showed an increase of 33·7 p.c. from the total for 1939.

A Log Train on its Way to the Mill.—In British Columbia logging operators have used considerable ingenuity in erecting rail lines across extremely difficult terrain.

Courtesy, Wartime Information

Production of Sawn Lumber and All Sawmill Products, 1940

Province	Sawn Lumber Production		Total Sawmill Products
	M ft. b.m.	$	$
Prince Edward Island	4,303	84,471	118,099
Nova Scotia	285,777	5,663,416	6,034,352
New Brunswick	296,835	6,955,941	8,473,384
Quebec	795,374	18,538,393	23,003,646
Ontario	607,016	16,718,170	20,933,784
Manitoba	77,348	1,606,120	1,736,172
Saskatchewan	85,590	1,682,989	1,785,035
Alberta	152,401	2,633,421	3,023,373
British Columbia	2,324,408	52,108,296	68,797,539
Totals	**4,629,052**	**105,991,217**	**133,905,384**

The Pulp and Paper Industry

The pulp and paper industry in 1940 ranked first among Canadian manufacturing industries in capital, wage and salary distribution, and net value of production. It was second to the non-ferrous smelting and refining group with respect to gross production, and second to the sawmills in employment.

The manufacture of paper was a relatively unimportant industry in Canada until the last two decades of the past century when wood-pulp superseded rags as a raw material. Canada's extensive pulpwood resources and widely distributed water powers have been largely responsible for the remarkable development of the industry.

The pulp and paper industry has headed the lists in net value of production since 1920, and in wage and salary distribution since 1922, replacing the sawmills in both cases. It was the first in gross value of production from 1925 (when it replaced the flour mills) until 1935 (when it was overtaken by the non-ferrous metal group). In these comparisons only the manufacturing stages of the pulp and paper industry are considered, no allowance being made for the capital invested, employment furnished, payroll, or production of those operations in the woods that form such an essential part of the industry as a whole.

The End of the Drive.—These logs were cut about 150 miles north of the sorting gap through which they are being run. The logs are claimed by the several companies and are floated to the mills.

Courtesy, Wartime Information

The gross value of output of the industry increased rapidly and steadily until the boom years following the War of 1914-18 and jumped to a peak of over $232,000,000 in 1920. This was followed, in 1921, by a drop that was general throughout the industrial field. Then followed a steady recovery up to a second peak in 1929 of $243,970,761. The 1941 total exceeded all previous records. Figures from 1930 are:—

	Gross Production	Net Production		Gross Production	Net Production
1930	$215,674,246	$107,523,731	1936	$183,632,995	$ 85,739,406
1931	174,733,954	87,858,357	1937	226,244,711	106,002,017
1932	135,648,729	66,855,923	1938	183,897,503	89,034,186
1933	123,415,492	56,880,641	1939	208,152,295	103,123,660
1934	152,647,756	77,243,309	1940	298,034,843	158,230,575
1935	159,325,546	78,647,626	1941	334,746,199	174,872,065

There are three classes of mills in the industry. These, in 1941, comprised 28 making pulp only, 51 combined pulp and paper mills, and 27 making paper only. In 1941 the 79 mills making pulp produced 5,720,847 tons valued at $175,439,551, representing an increase of 8·1 p.c. in quantity and an increase of 17·7 p.c. in value over 1940. About 72 p.c. by quantity was made in combined mills and used by them in papermaking and about 28 p.c. was made for sale in Canada and for export. Of the total pulp production in Canada in 1941, 61 p.c. was ground wood, 19 p.c. unbleached sulphite, 10 p.c. bleached sulphite, 8 p.c. soda, sulphate and other fibre, and the remaining 2 p.c. screenings, etc.

Newsprint made up 78 p.c. of the total production of Canada's 78 paper mills in 1941; paper boards 14 p.c.; wrapping paper 4 p.c.; book and writing paper 2 p.c.; and tissue and miscellaneous papers the remainder.

Figures covering the conversion of basic paper-board stock into more highly manufactured products are not included here.

Production of Newsprint and Total Paper in Canada, 1934-41

Year	Newsprint Paper		Total Paper	
	Quantity	Value	Quantity	Value
	tons	$	tons	$
1934	2,604,973	86,811,460	3,069,516	120,892,225
1935	2,765,444	88,436,465	3,280,896	125,752,650
1936	3,225,386	105,214,533	3,806,710	146,354,666
1937	3,673,886	126,424,303	4,345,361	175,885,423
1938	2,668,913	107,051,202	3,249,358	151,650,065
1939	2,926,597	120,858,583	3,600,502	170,776,062
1940	3,503,801	158,447,311	4,319,414	225,836,809
1941	3,519,733	158,925,310	4,530,141	241,470,616

The Canadian production of paper is more than five and a quarter times that of 1917, in spite of the decreases in 1921, 1930, 1931, 1932 and 1938. Practically all the different kinds of paper used in Canada at the present time can be produced in Canadian mills.

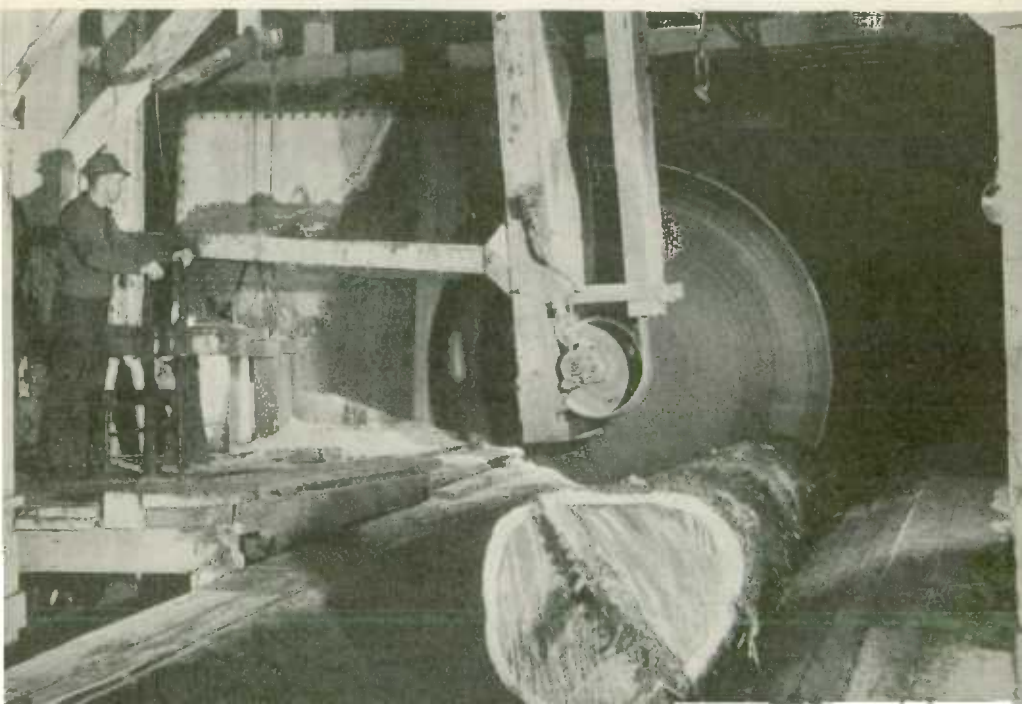
Canada's newsprint production in 1941 was over three times that of the United States, a few years ago the world's chief producer. Estimated production for 1942 is 3,177,102 tons.

Monthly figures of Canadian newsprint production for 1942 are:—

	tons		tons		tons
January	311,904	May	251,831	September	257,618
February	278,101	June	242,762	October	271,555
March	295,835	July	241,178	November	256,147
April	277,741	August	253,239	December	244,191

The Largest Circular Saw in the British Empire at Work in a British Columbia Sawmill; its Diameter is 108 Inches.

Courtesy, Wartime Information



CHAPTER V

Fur Production

The fur trade of Canada which, in the early days, dominated all other pursuits and led to the exploration and the eventual settlement of the country, is still of importance, and a strong policy to conserve this resource has been inaugurated by the Provincial Governments in co-operation with the Dominion authorities. Laws have been passed under which provision is made for close seasons, for the licensing of trappers and traders, for the collection of royalties on pelts, and for the regulation of the methods to be employed in trapping animals. In recent years the trade has been assisted by the establishment of fur farms, which now supply nearly all the silver fox and about 40 p.c. of the mink pelts.

Trends in Production.—The value of Canada's production of raw furs for the year ended June 30, 1941, exceeded that of the preceding season by 27 p.c., and that of 1939-40 by 48 p.c. The total production comprises pelts taken by trappers and pelts sold from fur farms. It is impossible to make an exact division between the two classes, since statistics of fur farms are for the calendar year, but it is estimated that approximately 27 p.c. of the total value of raw-fur production in the season 1940-41 may be credited to fur farms.

The increase in the total value of raw-fur production in 1940-41 over 1939-40 was mainly due to the rise in prices for most kinds of furs: beaver advanced from an average price of $18·18 to $23·03; ermine from 57 cents to 93 cents; silver fox from $15·43 to $21·58; white fox from $8·66 to $18·38; lynx from $35·70 to $41·34; mink from $8·89 to $11·08; and muskrat from $1·18 to $1·79.

The total number of pelts produced showed a reduction from the preceding season of 25 p.c. Muskrat and squirrel, which are among the less expensive furs, are the kinds most largely used; in 1940-41, the number of muskrat pelts entering into the fur trade was 2,795,218, or 38·5 p.c. of the total for all kinds, while the number of squirrel pelts was 1,935,837, or 26·7 p.c. Both muskrat and squirrel showed decreases from the preceding season in the numbers of pelts, but increases in average prices. The percentage of the value sold from fur farms rose from 4 p.c. in earlier years to as high as 43 p.c. in 1937-38, but dropped to 27 p.c. in 1940-41.

The manufacture of fur goods (coats, capes, scarves, muffs, etc.) constitutes an important Canadian industry, giving employment in 1940 to 4,167 persons and producing goods valued at $22,991,393. The bulk of the fur goods produced in Canada is for domestic consumption and practically the entire Canadian demand for fur goods is met by the home product; the imports and exports of fur goods are of small im-

A Marten in its Native Habitat.

Courtesy, Canadian Forestry Association

portance. The fur dressing and dyeing industry operates on a custom basis; the number of skins treated in 1940 was 9,021,302, mainly rabbit and muskrat. The total amount received by the plants for the treatment of the furs was $2,259,172.

Numbers and Values of Pelts Taken, Seasons 1927-28 to 1940-41

Season	Pelts	Total Value	Season	Pelts	Total Value
	No.	$		No.	$
1927–28	3,601,153	18,758,177	1934–35	4,926,413	12,843,341
1928–29	5,150,328	18,745,473	1935–36	4,596,713	15,464,883
1929–30	3,798,444	12,158,376	1936–37	6,237,640	17,526,365
1930–31	4,060,356	11,803,217	1937–38	4,745,927	13,196,354
1931–32	4,449,289	10,189,481	1938–39	6,492,222	14,286,937
1932–33	4,503,558	10,305,154	1939–40	9,620,695	16,668,348
1933–34	6,076,197	12,349,328	1940–41	7,254,787	21,123,161

Fur Farming.—In the early days of the fur trade it was the practice in Canada for trappers to keep foxes caught out of season alive until the fur was prime and from this custom arose the modern industry of fur farming. Silver fox was the first important commercial fur bearer successfully raised in captivity and is still of greatest importance from the standpoint of total value. Experiments have lately been made at fixing the strains for such colour phases of the fox as platinum, pearl-platinum, white-face, silver-blue, ring-neck, etc. There were 2,314 such foxes on farms at the end of 1940.

Second to the silver fox in importance is the mink, which is easily domesticated and thrives in captivity if care is exercised in the selection of environment and proper attention given to diet. The high prices obtainable for fisher and marten pelts have encouraged efforts to raise these animals and a moderate amount of success has been attained in each case. The valuable chinchilla has recently been added to the animals raised in captivity on Canadian farms and the raising of nutria is also showing progress.

The Dominion Department of Agriculture conducts, at Summerside, P.E.I., an experimental fur farm for the study of matters affecting the health of fur-bearing animals, especially the silver fox, in captivity, and has, in addition, organized a service to assist in the marketing, both at home and abroad, of the pelts of Canadian fur bearers. Many of the Provincial Governments also have established branches that engage in experimental work and various other activities of value to the fur-farming industry.

Rehabilitating Fur-Producing Marshes.—In the drought period of the early '30's large tracts of once rich fur-producing areas in Western Canada were dried out and, by 1934, almost depleted of fur. A rehabilitation project was undertaken by the Government of Manitoba in the Summerberry area; this proved so successful that by 1940 trappers were able to take out tens of thousands of muskrats. *Top*: The Summerberry area in 1935. *Bottom*: Muskrats at home again in 1940.

Courtesy, Manitoba Travel and Publicity Bureau

Platinum Fox Pups.—This new type of fox has recently been developed in Canada along commercial lines.

Courtesy, Manitoba Travel and Publicity Bureau

Statistics of Fur Farming.—The number of fur farms in operation in Canada in 1940 was 9,164 compared with 9,899 in the preceding year and it is expected that there will be a further decrease in 1941 due to the effects of the War. Although there were fewer farms in 1940, the value of fur-farm property at $14,345,386, was only $386 less than in 1939. All the western provinces and Nova Scotia recorded increases in this respect. Ontario stood first among the provinces in value of fur-farm property with 20·2 p.c. of the total. The other provinces ranked as follows: Que., 18·2 p.c.; Alta., 16·2 p.c.; Man., 15·2 p.c.; Sask., 8·8 p.c.; P.E.I., 7·2 p.c.; B.C., 6·4 p.c.; N.B., 4·2 p.c.; N.S., 3·4 p.c.; and Yukon, 0·2 p.c.

The total revenue of the fur-farming industry in 1940 was $6,153,074, 91 p.c. of which was received from the sale of pelts and the remainder from the sale of live animals. Silver-fox pelts accounted for $3,318,874, or 59 p.c. of the total pelt sales, and mink for 2,208,567, or 39 p.c. The average value of silver-fox pelts was $17·92 compared with $15·84 in 1939, and of mink pelts $9·64 compared with $8·17. Live silver fox sold numbered 5,359 and were valued at $209,486; mink numbered 10,739 valued at $206,431; and new type fox, including platinum, white-face, silver-blue, etc., numbered 490 valued at $106,737. Compared with 1939, the total value of pelts sold showed an increase of 403,697, while the value of live animals sold declined by $50,915.

The value of the animals on the farms at the end of 1940 was $7,094,357, 51 p.c. of which was the value of silver fox and 41 p.c. the value of mink. The 93,715 silver fox on the farms was a decrease from the preceding year of 11,256, and the 132,614 mink an increase of 9,765. The total number of fur-bearing animals on farms was 234,269 compared with 253,418 in 1939.

From information received direct from the fur farmers, it is estimated that 142,700 standard silver fox, 18,900 new type fox and 333,000 mink will be pelted in the season 1942-43.

Export Trade in Furs.—For many years London and New York have been the chief markets for Canadian furs but the present war has altered this situation and Canadian furs are now disposed of on the home market. Since 1920 Montreal has occupied a position as an international fur market and Winnipeg, Edmonton and Vancouver also operate auction sales.

Fishing Schooner Leaving Halifax.

CHAPTER VI

Fisheries Production

Canada has perhaps the largest fishing grounds in the world. On the Atlantic, from Grand Manan to Labrador, the coast line, not including the lesser bays and indentations, measures over 5,000 miles. The Bay of Fundy, 8,000 square miles in extent, the Gulf of St. Lawrence, fully ten times that size, and other ocean waters comprise not less than 200,000 square miles or over four-fifths of the area of the fishing grounds of the North Atlantic. In addition there are on the Atlantic seaboard 15,000 square miles of inshore waters controlled entirely by the Dominion. The Pacific Coast of the Dominion measures 7,180 miles in length. Inland lakes contain more than half of the fresh water on the planet; Canada's share of the Great Lakes alone has an area of over 34,000 square miles.

Statistics of Production

Canada's list of food fishes embraces nearly 60 different kinds, chief among which are the salmon, the cod, the herring, the lobster, the whitefish, the halibut, the haddock, the pickerel and the trout. The total quantity of fish of all kinds taken by Canadian fishermen in 1941 was 11,988,562 cwt., for which fishermen received, at the point of landing, a total of $34,377,866 compared with a catch of 12,195,656 cwt. with a landed value of $23,630,399 in 1940.

The salmon fishery of British Columbia gives to that province first place in respect to value of production, the position that in earlier times belonged to Nova Scotia on account of her cod fishery. The herring fishery (on both the Atlantic and Pacific Coasts) is of rising importance and in British Columbia is now second only to salmon in value of output. Canned herring is the chief product of this fishery, but herring meal and oil are also of importance. On the Atlantic Coast, the cod, lobster and sardine fisheries are of main importance, while among the inland fishes, whitefish occupies first place.

Purse-Seining for Salmon off the British Columbia Coast.—The catch of salmon in the 1942 season was of record proportions. All the year's sockeye catch canned on the Coast is destined for the British Isles.

Courtesy, Department of Fisheries

Fisheries Production, by Provinces, 1914, 1940 and 1941

Province or Territory	Values of Production			Percentages of Total Values		
	1914	1940	1941	1914	1940	1941
	$	$	$	p.c.	p.c.	p.c.
Prince Edward Island	1,261,666	714,870	952,026	4·1	1·6	1·5
Nova Scotia	7,730,191	9,843,456	12,634,957	24·7	21·8	20·3
New Brunswick	4,940,083	4,965,618	6,484,831	15·8	11·0	10·4
Quebec	1,924,430	2,002,053	2,842,041	6·2	4·4	4·5
Ontario	2,755,291	3,035,100	3,518,402	8·8	6·7	5·7
Manitoba	849,422	1,988,545	3,233,115	2·7	4·4	5·2
Saskatchewan	132,017	403,510	414,492	0·4	1·0	0·7
Alberta	86,720	450,574	440,444	0·3	1·0	0·7
British Columbia	11,515,086	21,710,167	31,732,037	36·8	48·1	51·0
Yukon	69,725	4,994	6,652	0·2	–	–
Totals	**31,264,631**	**45,118,887**	**62,258,997**	**100·0**	**100·0**	**100·0**

Fisheries Production, by Principal Kinds, 1940 and 1941

(Each over $1,000,000 in value)

Kind of fish	1940		1941	
	Quantity Caught	Value Marketed	Quantity Caught	Value Marketed
	cwt.	$	cwt.	$
Salmon	1,458,145	14,170,496	1,938,182	21,475,275
Cod	1,932,966	4,984,504	1,957,153	7,494,604
Herring	4,686,300	6,256,508	2,785,264	6,702,947
Lobsters	267,991	3,187,594	278,023	3,858,733
Sardines	224,428[1]	1,883,375	443,733[1]	2,846,808
Whitefish	168,179	1,928,862	178,659	2,492,671
Halibut	148,197	1,859,276	149,525	2,425,561
Pilchards	575,399	632,393	1,200,913	1,781,876
Haddock	355,574	1,443,729	287,766	1,410,227
Pickerel	105,800	1,011,131	126,304	1,253,244

[1]bbl

The fish-processing industry is connected entirely with the sea fisheries, the plants being scattered along the coasts in locations of easy accessibility to the fishermen in delivering their catches.

Capital Invested and Employees Engaged in the Fisheries, 1939-41

Item	1939	1940	1941
Capital	$	$	$
Vessels, boats, nets, traps, etc.	25,844,436	26,221,269	27,555,528
Fish-processing establishments	21,479,200	23,257,676	27,534,878
Totals, Capital	**47,323,636**	**49,478,945**	**55,090,406**
Employees	No.	No.	No.
On vessels and boats, and in fishing without boats	68,941	68,817	63,745
In fish-processing establishments	14,805	15,044	15,842
Totals, Employees	**83,746**	**83,861**	**79,587**

The chief markets for Canadian fish have always been the United Kingdom and the United States, processed fish, mainly canned salmon, going to the former and fresh fish to the latter.

Drying the Nets at an Atlantic Coast Fishing Village.
Courtesy, Department of Fisheries

Production in 1942.—Two factors combined to put unprecedented production demand upon the fishing industry in 1942, and at the very time when certain causes, arising like the others directly from the War, had operated to reduce the industry's productive power. The first was Great Britain's urgent need for the maximum possible quantities of Canadian canned salmon and of canned herring in tomato sauce. The second was the increase created in Canada's domestic requirements by the need of fish to take the place of large quantities of other protein foods which the Dominion has been supplying to the United Nations. On the other hand, enlistment of many fishermen and other fishery workers, the flow of people from the fisheries to war-equipment plants, and the requisitioning of many of the larger fishing vessels for national defence have lessened the productive capacity of the industry.

On the whole, during 1942, production was well maintained, though in a number of fisheries the catch fell below the 1941 level. So far as canned salmon for Britain was concerned, the entire pack of approximately 1,800,000 standard 48-lb. cases produced on the Pacific Coast, where virtually all of Canada's salmon canning is done, was made available to the British people under an arrangement between the Canadian and British Governments. Shipment of canned salmon to the United Kingdom was quickly increased in volume following the outbreak of war, and increase has been a continuing process. In 1941 nearly 1,500,000 cases were sent to Britain, or two-thirds of the year's British Columbia output and a much larger quantity than had ever before gone to the United Kingdom. In 1942 there were no limits upon salmon supplies for Great Britain other than those imposed by the size of the salmon runs themselves and, as noted, the shipments exceeded the 1941 total by some 300,000 cases. In the case of canned herring for British consumption there has been enormous expansion in Canadian production during the war years, mainly on the Pacific Coast. Prior to 1939 Canada sent no canned herring to Britain, but in 1941 the shipments amounted to more than 44,000,000 lb.—almost all of the Dominion's pack of herring in tomato sauce. In 1942 Britain also had first claim on the entire Canadian output of herring in this form.

CHAPTER VII

Mines and Minerals

Strategic Minerals and the Canadian War Effort.—It is well understood that no country is self-sufficient in mineral resources. In times of peace each country concentrates on those resources that it has in abundance and can develop economically and relies on other countries for those in which it is deficient or in which the cost of production is too high to meet foreign competition. In times of war, however, the economic side is pushed into the background and necessity predominates. When the natural channels of trade are interrupted and the imports of strategic minerals are cut off, it is necessary to fulfil, if possible, immediate needs by domestic production.

Prior to the present war Canada was producing the common base metals—lead, zinc and copper—far in excess of her own requirements and she held also a dominant position in the output of nickel, supplying upwards of 85 p.c. of world requirements. Shortly after war broke out, Canadian companies undertook to sell to Great Britain for the duration, at prices then prevailing, all the copper, lead and zinc produced over and above Canadian requirements. Increase in price was to be allowed only in case of increase in cost of production beyond control, such as an increase in labour costs or in the cost of supplies. Although the Canadian supply of these base metals was considered adequate at the commencement of hostilities, their output and distribution have since been brought under strict control because of the increasing requirements of the Allied Nations.

The demand for metals of all kinds increases rapidly in war-time and Canada soon found deficiencies in the supplies of magnesium, tungsten, molybdenum, chromite, mercury, manganese, tin and antimony. Ores of most of these metals were known to exist, and mining companies and prospectors, assisted by officers of the Mines Departments of the Dominion and Provincial Governments, immediately commenced the reprospecting of old ground and the search for new promising geological territory. Operators, with the knowledge that certain rare minerals or metals occurred with their economic product, began to explore the possibilities of extraction as a by-product.

The space that can be given to mining in this edition of the Handbook is devoted mainly to the discussion of these new developments.

Magnesium.—Perhaps the most outstanding achievement during the present war in the production of strategic metals is the manufacture of magnesium. Magnesium is the lightest metal that is stable under atmospheric conditions. It is 1·73 times the weight of water, or 40 p.c. lighter than aluminum and one-quarter the weight of iron. This means that in certain cases 175 lb. of magnesium will do the work of 270 lb. of aluminum. In a new age of rapid movement both on the earth and above it, heavy materials are giving way to light ones and the use of magnesium in industry is being increased.

Despite its rarity in the metallic state, magnesium is one of the more plentiful elements in the earth's crust. If commercial metals only are considered, its abundance is exceeded only by aluminum and iron. Magnesium-containing minerals are widely distributed and, in addition, the sea forms an enormous source; each cubic mile contains more than five million tons—enough to supply the pre-war requirements of

this continent for about 1,000 years. Terrestrial deposits consist of dried-up sea beds or sedimentary deposits. In Canada the most abundant source of magnesium is dolomite, which occurs in many locations; for example, the Niagara Escarpment consists of dolomite.

Magnesium Ingots.—Note the lightness of the finished product which is easily handled by the workman.
Courtesy, National Research Council

Magnesium is even more difficult to extract from its ores than aluminum and the process has been learned only in recent years. The main method of extraction is by electrolysis. As with aluminum it is necessary to employ large amounts of electric energy, in fact the power consumed is much the same, about 10 kwh. per lb. The raw material, by suitable treatment, is converted into anhydrous magnesium chloride—a white salt that is mixed with common salt (sodium chloride) and melted at red heat. A direct current passed through the molten mass liberates magnesium at the negative pole (cathode) and chlorine at the positive pole (anode). While this process is used for most of the magnesium produced, new methods are being developed. Based upon the fact that magnesium is volatile and may be vaporized, it is possible to evolve the metal in one step from some of its ores. The metal vapour is condensed to form crystals—sometimes of great beauty.

In the new plant of Dominion Magnesium Limited, near Renfrew, Ontario, a method developed at the National Research Council uses dolomite as the raw material. The dolomite is calcined to drive off carbon dioxide and the lime so formed is heated with ferrosilicon under a vacuum. The ferrosilicon reduces the magnesium, which is evolved as a gas and condensed directly to solid metal elsewhere in the system.

At present the metal is in great demand for war purposes. It is used for certain important components of aircraft, such as parts of engines, wheels, structural parts, instruments and furniture. Magnesium forms an essential component of the flares and flash compositions, so vital in night warfare. It also makes the most effective incendiary bomb and thousands of tons have been employed in this manner. Despite the fierceness with which its burns, magnesium is very difficult to ignite and absolutely no danger follows its use in industrial shapes—rods and sheets may actually be welded using the oxy-acetylene torch.

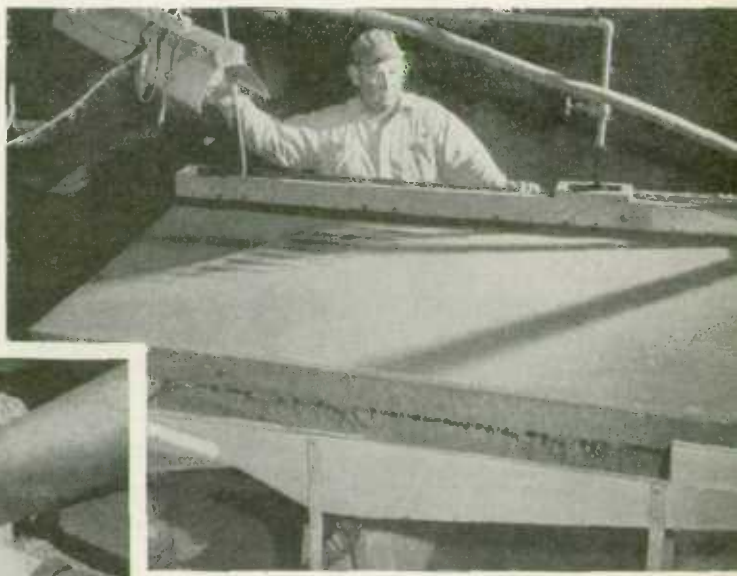
When peace comes the magnesium output of North America will be fifty times as great as it was at the outbreak of war. This great industry can only maintain itself by the creation of new demands for the ultra-light metals. Magnesium, hand in hand with aluminum—for each has its place—must invade many fields where previously heavy metals or non-metals held sway. Besides the obvious use in aircraft, it will be used in trains, motor-cars and other means of terrestrial transport. It may also be used in furniture and hand-power tools for, even before the War, vacuum cleaners were made of magnesium.

In this new era, Canada is well fitted to occupy as important a place as a producer of magnesium as she now does in regard to aluminum.

Tungsten.—Canada's very important place in the manufacture of war equipment created an unprecedented demand for tungsten. Tungsten alloy steels are extensively used in making armour plate and armour-piercing projectiles. Tungsten is also used in the manufacture of high-speed tool steels. Tools made therefrom do not lose their cutting effectiveness even when heated to high temperatures.

All sources of tungsten ore were immediately explored. Ores were known to occur in association with gold, but very little had been done by way of their recovery since supplies were forthcoming in normal times from several sources in sufficient quantities to meet the normal world demand; China and Burma are two of the most important tungsten-producing countries of the world. Some Canadian gold mines have installed machinery for its recovery, and others ship hand-picked ore to the Department of Mines' Laboratories, Ottawa, where the tungsten-bearing mineral is extracted. Geologists from Government Departments and from private companies have been in the field from British Columbia to Nova Scotia for the past year and a half searching for tungsten ores, and their efforts have not gone unrewarded. A very important discovery has been made in British Columbia, which will be operated as a Government enterprise. The principal Canadian ore is scheelite and the best test for its occurrence is by means of the short wave ultra-violet light which, in the dark, causes scheelite to fluoresce a brilliant blue-white. Although little was known 18 months ago in Canada regarding this method of detecting scheelite, it is now common knowledge to most mining men and prospectors.

Tungsten for War Industries



Among the rare metals, tungsten, which formerly came from China, is now being produced in Canada. It is used as a hardening agent in the manufacture of tool steel. A workman is shown examining tungsten concentrate during the milling process. *Inset*: Tungsten concentrate fresh from the mill; it is added to the melting pots in this form.

Courtesy, Wartime Information

Molybdenum.—Molybdenum is another metal that is in great demand in the manufacture of alloy steel. Canada produced some molybdenite, the ore of molybdenum, during the First World War and attempts at further production have been made from time to time with very little success. It was generally thought at the outbreak of the present war that the Climax Molybdenum mine in Colorado could produce enough to satisfy the demand, but requirements for war exceeded all estimates and efforts are being made to work the known Canadian orebodies. One mine in Ontario and another in Quebec are now being operated with the financial assistance of the Dominion Government.

Chromite.—Chromite has the quality of imparting rust-resistant qualities to steels and in recent years the use of chromium plate has increased because of its non-tarnishing qualities.

Turkey, Southern Rhodesia and South Africa have for years supplied the Western Hemisphere with the greater part of its requirements of chromite. Shortage of shipping space, danger in ocean transport and the increase in demand has resulted in intensified search for chromite in this country. Low-grade deposits in Quebec, which were mined during the First World War, are again being worked. During the late summer a chromite deposit was discovered in Manitoba that shows great promise.

Mercury.—Prior to the present war, practically all of Canada's mercury requirements were imported, but a mercury deposit has been brought into production at Pinchi Lake, B.C., which can more than supply the needs of this country.

Manganese.—Although manganese deposits are known to occur in several parts of Canada and considerable work has been done on them, no large orebodies of commercial grade have been uncovered as yet, and Canada must depend on outside sources for this mineral.

Tin.—Some concern regarding the supply of tin was evidenced in 1940 and arrangements were made to build up a reserve on this continent, but few Canadians gave much thought to its wide uses until Japan overran the Malay Peninsula. The chief world sources of tin are Malaya, Netherlands East Indies, Bolivia, Nigeria, and China. In fact, the greater part of the world's supply of tin came from countries bordering on the west side of the Pacific Ocean. Immediately Japan entered the War on the side of Germany, the problem of the tin supply became acute and it was not only necessary to control the supplies on hand drastically, but to bend every effort towards enlarging the output in countries that could be reached by Allied ships. In Canada, tin occurs in small quantities with the silver-lead-zinc ores of the Sullivan Mine in British Columbia, and a process has been developed for its recovery.

Antimony.—This metal is also produced as a by-product in the refining processes at Trail in sufficient quantities to supply Canadian requirements and leave some for export.

Iron.—No review of the strategic metal situation of Canada is complete without some reference to iron. Iron is the basis of all heavy construction and the immense deposits of Minnesota are being worked at a tremendous rate. Except for small quantities produced by the Algoma Ore Properties, a subsidiary of the Algoma Steel Corporation, Canada must import all her iron ore. Ontario furnaces import their supply from the United States and the Nova Scotia furnaces from Newfound-

Zinc from a British Columbia Mine.

Courtesy, Standard Sanitary and Dominion Radiator Limited

land. Canada is reported to have a large deposit of high-grade hematite at Steep Rock Lake, north of Atikokan in Ontario, about 120 miles west of Port Arthur. The ore-body lies under the lake, which is an enlargement of the Seine River. Plans are now under way to develop this property by diverting the course of the Seine River by means of dams and then lowering the lake level by pumping. It is expected that this tremendous engineering project, when completed, will place Canada in a much stronger position with regard to supplies of iron ore.

Non-Metallic Minerals.—Among the non-metallic minerals, mica, graphite, fluorspar and magnesite might be considered the most strategic. This country has long been a producer of mica in varying amounts, depending on the markets, but India and Madagascar have been severe peace-time competitors. Mica finds its greatest use as an insulator in the making of electrical equipment. On account of the greater demand caused by the War and the difficulties encountered in getting supplies from India and Madagascar, the mica production of this country has been on the increase. An extremely important deposit of white mica has been discovered near Mattawa, Ont., and is now in production.

Fluorspar, used in steel making and in the production of aluminium, has never been produced in large quantities in Canada, but medium-grade fluorspar occurs in the Madoc district of Ontario and this is now being exploited with Government assistance.

Magnesite, used as a refractory in lining steel furnaces and furnaces producing some of the non-ferrous metals, has long been imported. But a plant at Kilmar, Que.,

Mineral Production of Canada, by Provinces, 1940, 1941 and 1942

Province or Territory	1940		1941		1942[1]	
	Value	P.C. of Total	Value	P.C. of Total	Value	P.C. of Total
	$		$		$	
Nova Scotia	33,318,587	6·3	32,569,867	5·8	31,652,244	5·6
New Brunswick	3,435,916	0·7	3,690,675	0·7	3,508,323	0·6
Quebec	86,313,491	16·3	99,651,044	17·8	104,749,101	18·6
Ontario	261,483,349	49·3	267,435,727	47·7	258,423,267	45·8
Manitoba	17,828,522	3·4	16,689,867	3·0	14,643,269	2·6
Saskatchewan	11,505,858	2·2	15,020,555	2·7	19,613,354	3·5
Alberta	35,092,337	6·6	41,364,385	7·4	46,410,960	8·2
British Columbia	74,134,485	14·0	76,841,180	13·7	76,665,268	13·6
Yukon	4,118,333	1·2	3,117,992	0·5	3,301,414	0·6
Northwest Territories	2,594,157		3,860,298	0·7	5,223,079	0·9
Totals	**529,825,035**	**100·0**	**560,241,290**	**100·0**	**564,190,279**	**100·0**

[1]Preliminary estimate.

An Underground Haulage Way in a Canadian Mine.

Courtesy, The Northern Miner

using a magnesitic dolomitic rock, has been very successful in supplying the Canadian trade with a satisfactory material. In addition, brucite, a magnesium oxide, is now being produced at Farm Point, Que., from brucite-bearing limestone which is also being utilized at Kilmar in the manufacture of certain refractories.

Thus it would seem that as with the individual so with the nation; crises always bring out latent forces. What was considered impossible of achievement in ordinary times becomes commonplace when the necessity arises and substitutions, changes and improvements under duress result in social and economic progress.

Production in 1941 Compared with 1942.—The value of the mineral production of Canada reached an all-time high of $564,190,279 in 1942, an increase of nearly $4,000,000 over 1941, despite a drop in gold production of approximately $20,000,000.

Metals as a group totalled $392,762,562, a decrease of less than 1 p.c.; fuels, including coal, natural gas and crude petroleum, rose 6 p.c. to $90,305,631; other non-metallic minerals were recorded at $36,139,178 or nearly $2,000,000 more than in 1941. The structural materials group aggregated $44,982,908, representing a slight decrease from the preceding year.

As indicated by the foregoing general review, 1942 will rank as an outstanding year in general mining accomplishment. Several new mineral products were produced

Turner Valley, One of the Smaller Oil Refineries in Alberta.

Courtesy, Department of Mines and Resources

for the first time in a commercial way in Canada, but what is far more important, Canada was able to maintain her position in the production of the common base metals and to increase the output of many of those of which the supply is short.

Mineral Production of Canada 1941 and 1942

Item	1941		1942[1]	
	Quantity	Value	Quantity	Value
METALLIC		$		$
Gold.....fine oz.	5,345,179	205,789,392	4,829,815	185,947,877
Silver.....fine oz.	21,754,408	8,323,454	20,671,986	8,585,076
Other precious metals.....	–	8,146,457	–	19,672,299
Copper, nickel, lead, zinc.....	–	166,012,444	–	167,431,091
Antimony, bismuth, cadmium, chromite, cobalt, magnesium, manganese, molybdenite, tin tungsten.....	–	2,389,949	–	4,177,813
Miscellaneous—arsenic, iron ore, mercury, radium, selenium, tellurium, titanium ore, uranium..	–	4,684,885	–	6,948,406
TOTALS, METALLICS.....	–	395,346,581	–	392,762,562
NON-METALLICS Fuels				
Coal.....ton	18,225,921	58,059,630	18,707,110	62,175,909
Natural gas.....M cu. ft	43,495,353	12,665,116	42,719,100	12,201,510
Peat, for fuel.....ton	355	2,155	210	1,370
Petroleum, crude.....bbl.	10,133,838	14,415,096	10,363,360	15,926,842
TOTALS, FUELS.....	–	85,141,997	–	90,305,631
Other Non-Metallics				
Asbestos, fluorspar, graphite, magnesitic-dolomite and brucite, mica, sulphur.....	–	24,568,926	–	25,701,346
Barytes.....ton	6,890	74,416	16,667	154,060
Diatomite.....ton	344	9,935	315	8,800
Feldspar.....ton	26,040	244,284	20,228	196,203
Nepheline syenite.....ton	–	227,583	–	196,270
Garnets (schist).....ton	16	160	18	176
Grindstones.....ton	188	11,500	216	10,000
Gypsum.....ton	1,593,406	2,248,428	580,575	1,180,565
Iron oxides.....ton	10,045	142,069	9,160	150,845
Magnesium sulphate.....ton	265	7,343	1,140	40,000
Mineral waters.....Imp. gal.	181,064	72,531	175,000	68,000
Peat moss.....ton	27,803	644,253	44,916	1,049,029
Phosphate.....ton	2,487	33,376	1,892	16,776
Quartz.....ton	2,052,878	1,366,187	1,646,679	1,832,370
Salt.....ton	560,845	3,196,165	658,458	3,922,566
Silica brick.....M	4,111	238,433	4,120	255,700
Sodium carbonate.....ton	186	1,488	256	2,048
Sodium sulphate.....ton	115,608	931,554	128,912	1,064,266
Talc and soapstone.....	–	360,809	–	290,158
TOTALS, OTHER NON-METALLICS	–	34,379,440	–	36,139,178
CLAY PRODUCTS AND OTHER STRUCTURAL MATERIALS				
Clay products (brick, tile, sewer pipe, etc.).....	–	7,575,336	–	7,449,787
Cement.....bbl.	8,368,711	13,063,588	9,176,631	14,289,192
Lime.....ton	860,885	6,357,941	897,554	6,488,297
Sand and gravel.....ton	31,604,806	10,375,723	23,548,852	7,742,947
Stone.....ton	7,940,801	8,000,684	8,736,033	9,012,685
TOTALS, CLAY PRODUCTS, ETC..	–	45,373,272	–	44,982,908
Grand Totals.....	–	**560,241,290**	–	**564,190,279**

[1]Preliminary estimate.

CHAPTER VIII

Water Powers

Canada is richly endowed with water-power resources, the development of which dates from the arrival of the early French settlers at the beginning of the seventeenth century. During the past forty years this development has proceeded at such a rapid rate as to affect profoundly the entire national economy, influencing the growth of population, transportation systems, home and external trade, and national income. Water power is so general and widespread in its availability that more than 98 p.c. of all electricity generated for sale is distributed from hydro-electric stations and all but the most isolated hamlets enjoy the amenities of electric lighting, radio, cooking and domestic appliances.

Available and Developed Water Power, by Provinces, Jan. 1, 1943

Province or Territory	Available 24-Hour Power at 80 p.c. Efficiency		Turbine Installation
	At Ordinary Minimum Flow	At Ordinary Six-Month Flow	
	h.p.	h.p.	h.p.
Prince Edward Island	3,000	5,300	2,617
Nova Scotia	20,800	128,300	143,717
New Brunswick	68,600	169,100	133,347
Quebec	8,459,000	13,064,000	4,839,543
Ontario	5,330,000	6,940,000	2,684,395
Manitoba	3,309,000	5,344,500	420,925
Saskatchewan	542,000	1,082,000	90,835
Alberta	390,000	1,049,500	94,997
British Columbia	1,931,000	5,103,500	792,563
Yukon and Northwest Territories	294,000	731,000	22,899
Canada	**20,347,400**	**33,617,200**	**9,225,838**

The most recent estimates indicate that Canada's water powers will provide for a commercial installation of 43,700,000 h.p. Installation as of Jan. 1, 1943, totalled 9,225,838 h.p., slightly more than 21·11 p.c. of the total possible installation.

An article on "Power in Relation to Canadian War Production" appears at pp. 43 to 50 of this Handbook.

Provincial Distribution of Water Power.—The water powers of the *Maritime Provinces,* while small in comparison with the sites in the other provinces, are a valuable economic resource that is augmented by abundant local coal supplies. *Quebec* has the largest known resources of water power and the greatest development; her present installation is almost 52·2 p.c. of Canada's total. More than 91 p.c. of total installation is operated by central electric station organizations. *Ontario,* which, like Quebec, is without local coal supplies, is second in power resources and their development. Here the Hydro-Electric Commission operates plants aggregating more than 66 p.c. of the total installation of the Province, while an additional 21 p.c. is operated by other central station organizations. Of the *Prairie Provinces,* Manitoba has the greatest power resources and the greatest development, almost 70 p.c. of the total hydraulic development of the three provinces being installed on the Winnipeg River to serve the Winnipeg area and, over the transmission network of the Manitoba Power

The Barrett-Chute Development, Madawaska River, Ont.—The massive main dam (right) is more than a quarter of a mile in length and towers to a height of 97 feet above the old river bed. *Inset:* Two of the 27,000 h.p. generators installed in the Barrett-Chute plant. These generators are of the vertical water-wheel type with main and pilot exciters directly connected.

Courtesy, Hydro-Electric Power Commission of Ontario

Commission, more than 150 cities, towns, and villages in southern Manitoba. In the section of the Prairie Provinces containing least water power, there are large fuel resources. *British Columbia* ranks fourth in available power resources and her hydraulic development is exceeded in Quebec and Ontario only. The water powers of *Yukon* and the *Northwest Territories* are considerable, but present development is limited to mining uses.

Hydro-Electric Construction during 1942.—New water-power installations during 1942 totalled 378,600 h.p. which, with a 2,200-h.p. unit installed in 1941 but not reported until after the end of the year, brings Canada's total hydraulic development as at Jan. 1, 1943, to 9,225,838 h.p. Construction now in progress will add one million horse-power more in the course of the next 18 months and even then almost 80 p.c. of Canada's resources will remain for development as demand arises.

In Alberta the Calgary Power Company's Minnewanka Lake development began full operation on Oct. 15, 1942. This development provides power for an extensive electro-chemical munitions industry and comprises a reservoir of 180,000 acre-feet in Lake Minnewanka and a 23,000-h.p. generating station on the Cascade River

near Anthracite. The same company has enlarged its storage reservoir on Upper Kananaskis Lake by 55,300 acre-feet. These storage reservoirs will augment the supply of power to the company's four generating stations on the Bow River near Calgary.

In Saskatchewan the Churchill River Power Company constructed a dam at Whitesand Rapids at the south end of Reindeer Lake to provide additional storage for water for power production at its generating station at Island Falls.

In conjunction with the Department of National Defence the Manitoba Power Commission constructed and will service a considerable mileage of transmission lines to serve airfields and other defence projects, and to relieve overloading on existing lines heavily taxed because of the creation of war-time power loads. Improved sub-station facilities were installed where necessary.

In Ontario, installations totalling 66,900 h.p. came into operation. The Hydro-Electric Power Commission of Ontario completed its second hydro-electric generating station on the Madawaska River. This plant, at Barrett Chute, has an installation of 56,000 h.p. and provides a substantial addition to the power supply of the Commission's Eastern Ontario System. The building of Bark Lake dam 65 miles upstream from the generating station created a reservoir impounding 300,000 acre-feet of water.

The Commission is also proceeding with the construction of a new plant at DeCew Falls. This plant draws water from the Welland Ship Canal and will have an initial installation of one unit of 65,000 h.p.: this, it is expected, will be in operation in 1943.

By agreement between Canada and the United States a submerged weir is being built jointly by the two countries in the Niagara River above the Falls; Canada's share of the construction being carried out by the Commission. The purpose of the weir is to raise the water surface in the Grass Island Pool sufficiently to compensate for reductions in level caused by increased diversions of water from the river by hydro-electric plants in both countries and to redistribute the flow to maintain the scenic beauty of the Falls and rapids.

In the northwestern part of the Province, active construction work was continued by the Commission on the Ogoki River diversion structures which were nearing completion at the end of the year. The diverted water will be available for augmenting power generation in plants on the Nipigon River and will eventually flow into Lake Superior together with waters already being diverted from Long Lake to increase the amount of water available for power at Niagara and elsewhere in the Great Lakes System.

Following the addition of a 10,500-h.p. unit last year in its Upper Falls Station on Montreal River, the Great Lakes Power Company added a 10,900-h.p. unit in August, 1942, to its plant at Lower Falls on the same stream.

Hydro-electric installation in Quebec totalled 280,400 h.p. and much additional construction is in progress.

The Aluminum Power Company added two units of 55,000 h.p. each to its Chute-à-Caron generating station on the Saguenay River and brought the first two 85,000-h.p. units of its great Shipshaw development on the same stream into operation. The company is also constructing a 6,500 square-mile-feet reservoir on the Peribonka.

The La Sarre Power Company added a 400-h.p. unit to its generating station at Rapid No. 5 on the La Sarre River, bringing its installation to 1,225 h.p.

Additions in progress to the Shawinigan Water and Power Company's System include a 40,000-h.p. unit at Rapide Blanc generating station and one of 44,500 h.p. at La Tuque station, both on the St. Maurice River. These units are planned for operation in July, 1943. Three storage dams providing reservoir capacity of 160 square-mile-feet have been constructed to further regulate the flow of the river. The Company has extended its 110,000-volt transmission system to the south shore of the St. Lawrence River, thereby materially reducing its power losses.

The Beauharnois Light, Heat and Power Company has carried out extensive dredging of its intake canal and is enlarging the tailrace. The remainder of the remedial works to regulate the flow of Lake St. Francis for the withdrawal of water in the amount authorized are now under construction.

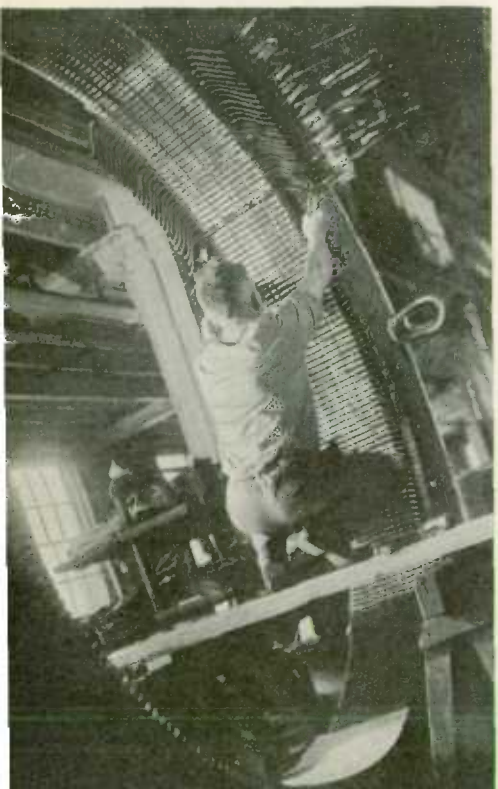
Montreal Light, Heat and Power Consolidated installed a 110,000-volt underground transmission circuit across Montreal to permit of more advantageous use of power derived from the St. Lawrence and St. Maurice Rivers. Two 40,000-kw. substations were added in the Rosemount and Guy Street Districts.

In the easterly section of the Province, the Municipality of Tadoussac has a 300-h.p. hydro-electric plant under construction on the Moulin-à-Baude River. It is expected to be in operation early in 1943.

The only hydraulic construction in the Maritime Provinces was the completion by the Avon River Power Company, a subsidiary of the Nova Scotia Light and Power Company, of its Lumsden Station at Hell's Gate on the Black River during the year. This station has a 4,500-h.p. turbine driving a 3,500-h.p. alternator.

An electrician working on the stator of a generator that will eventually be used in a northern mine.

Courtesy, Canadian Industries Limited



Central Electric Stations

Over 88 p.c. of all developed water power in Canada is developed by central electric stations and, although there are a large number of stations (298) that derive their power entirely from fuels and 39 hydraulic stations that also have thermal auxiliary equipment, 98 p.c. of all electricity generated for sale is produced by water power.

The production of electricity by central electric stations amounted to 5,500,000,000 kwh. in 1919, the first year for ior which such data are available. Six years later it was almost doubled, by 1928 it had more than trebled, and by 1930 it amounted to 18,000,000,000 kwh. With continued depression in manufacturing industries the output started to decline late in 1930 and continued into 1933, but from June, 1933, to the end of 1937 there was an almost continuous succession of increases each month after adjusting for normal seasonal variations.

A slump in 1938 in the pulp and paper industry, which takes about 40 p.c. of the total power generated, caused a reduction in the output for that year. The output for January, 1942, at 3,226,289,000 kwh., was the largest for any month in the history of the industry; an estimate for the year 1942 is 37,160,000,000 kwh., as compared with 33,445,360,000 kwh. shown for 1941. Only one other country (Norway) has a greater output per capita and only three other countries have greater total outputs irrespective of size. Reasons for this large use of electricity produced by central stations are the absence of coal in the central provinces and the large quantities of water power available within transmitting distances of the principal manufacturing centres. Low rates and reliable service have increased the domestic use for lighting, cooking, water heating and other household uses; the average per capita consumption has risen to 1,438 kwh. per annum, about 70 p.c. greater than in the United States where living standards are very similar.

Secondary power, used mainly in electric boilers in pulp and paper mills, increased from a very small quantity in 1924 to over 7,313,000,000 kwh. in 1937. With the increasing demand for firm power, this secondary power was reduced to 4,300,304,000 kwh. in 1941 and to 3,061,620,000 kwh. in the first eleven months of 1942, but the consumption of firm power, or total output less secondary power for electric boilers and exports to the United States, has continued to increase and was 18 p.c. heavier for the first eleven months of 1942 than for the same period of 1941.

The rated capacity of electric motors in manufacturing industries in Canada in 1940 was 81·1 p.c. of the total capacity of all power equipment in these industries, the increase from 61·3 p.c. in 1923 being almost continuous. In the mining industries this conversion to electric drive has been even greater, growing from 57·3 p.c. in 1923 to 79·8 p.c. in 1940. In 1940, 83 p.c. of these electric motors in manufacturing industries and 88 p.c. in mining industries were driven by power produced in central stations. Mechanical power, particularly electric motors, has been increasing in manufacturing industries much more rapidly than the number of employees during the past decade.

Average Monthly Output of Central Electric Stations, 1927-42

Year	From Water	From Fuel	Total	Year	From Water	From Fuel	Total
	'000 kwh.	'000 kwh.	'000 kwh.		'000 kwh.	'000 kwh.	'000 kwh.
1927	1,193,481	18,944	1,212,425	1935	1,917,958	32,410	1,950,368
1928	1,340,292	21,192	1,361,484	1936	2,078,739	37,452	2,116,191
1929	1,441,203	27,622	1,468,825	1937	2,256,779	41,882	2,298,661
1930	1,463,330	25,230	1,488,560	1938	2,130,006	37,728	2,167,734
1931	1,339,907	26,071	1,365,978	1939	2,321,815	40,811	2,362,626
1932	1,296,360	25,845	1,322,205	1940	2,460,466	46,222	2,506,688
1933	1,436,486	26,150	1,462,636	1941	2,731,880	55,233	2,787,113
1934	1,733,810	29,484	1,763,294	1942[1]	3,016,304	61,942	3,078,246

[1]Eleven-month average.

Electricity, principally hydro-electric energy, is displacing coal and oil to heat furnaces, ovens and boilers, and is doing enormous quantities of work in electrolytic refining of metals, production of fertilizers, metal plating, and so forth.

Investments in central electric stations for 1940 amounted to $1,615,438,140, which was larger than for any manufacturing industry; revenues amounted to $166,288,773 and 1,694,388 domestic customers were served. These are approximately 60 p.c. of all families in Canada, both urban and rural.

CHAPTER IX

Manufactures

The present century has witnessed the chief forward movement in Canadian manufactures, mainly as the result of two great influences: first, the opening up of the West, which greatly increased the demand for manufactured goods of all kinds and especially construction materials; and secondly, the First World War, which left a permanent imprint upon the variety and efficiency of Canadian plants.

To-day, the manufacturing industries of Canada stand on the threshold of a new era in their development. The demands created by the present war, owing to Canada's strategic position as a source of food supply and armaments, have had far-reaching effects on the magnitude and diversification of Canadian manufacturing production.

Statistics of Manufactures

The following pages give salient statistics of manufactures and emphasize the chief directions in which manufacturing developments are now taking place.

In the paragraphs following the table on page 109 a short review is given of some of the groups of industries that have felt the increased demands occasioned by the War.

The Boot and Shoe Industry Plays Its Part in the War Effort.—Workers assembling specially treated leather uppers for sewing and stitching into boots for Canada's Armed Forces. *Inset:* A craftsman keeping an unending flow of hob nails moving from nail box to mouth to toe sole.

Courtesy, Canadian Industries Limited

Historical Summary of Statistics of Manufactures, 1870–1940 With Details for 1940 by Provinces and Purpose Groups

Item	Establishments	Capital	Employees	Salaries and Wages	Cost of Materials	Net Value of Products[1]	Gross Value of Products
	No.	$	No.	$	$	$	$
1870	41,259	77,964,020	187,942	40,851,009	124,907,846	96,709,927	221,617,773
1880	49,722	165,302,623	254,935	59,429,002	179,918,593	129,757,475	309,676,068
1890	75,964	353,213,000	369,595	100,415,350	250,759,292	219,088,594	469,847,886
1900[2]	14,650	446,916,487	339,173	113,249,350	266,527,858	214,525,517	481,053,375
1910[2]	19,218	1,247,583,609	515,203	241,008,416	601,509,018	564,466,621	1,165,975,639
1920[2]	22,157	2,914,518,693	591,753	711,080,430	2,083,579,571	1,609,168,808	3,692,748,379
1929[2]	22,216	4,004,892,009	666,531	777,291,217	2,029,670,813	1,755,386,937	3,883,446,116
1933[3]	23,780	3,279,259,838	468,658	436,247,824	967,788,928	919,671,181	1,954,075,785
1934[3]	24,209	3,249,348,864	519,812	503,851,055	1,229,513,621	1,087,301,742	2,393,692,729
1935[3]	24,034	3,216,403,127	556,664	559,467,777	1,419,146,217	1,153,485,104	2,653,911,209
1936[3]	24,202	3,271,263,531	594,359	612,071,434	1,624,213,996	1,289,592,672	3,002,403,814
1937[3]	24,834	3,465,227,831	660,451	721,727,037	2,006,926,787	1,508,924,867	3,625,459,500
1938[3]	25,200	3,485,683,018	642,016	705,668,589	1,807,478,028	1,428,286,778	3,337,681,366
1939[3]	24,805	3,647,024,449	658,114	737,811,153	1,836,159,375	1,531,051,901	3,474,783,528
1940[3]	25,513	4,095,716,836	762,244	920,872,865	2,449,721,903	1,942,471,238	4,529,173,316
Province							
P.E.I.	219	2,940,818	1,057	645,800	2,518,233	1,270,233	3,856,544
N.S.	1,155	111,652,959	21,062	21,519,617	62,160,537	46,548,446	113,814,650
N.B.	777	93,108,166	16,859	17,639,789	46,939,404	38,253,475	89,281,008
Que.	8,381	1,345,927,911	252,492	277,639,876	713,132,575	595,552,909	1,357,375,776
Ont.	10,040	1,988,461,940	372,643	479,399,188	1,236,738,529	1,004,529,583	2,302,014,654
Man.	1,171	132,978,496	26,679	31,940,562	101,693,250	62,352,698	167,919,165
Sask.	814	40,698,082	7,415	8,412,580	48,654,473	25,857,683	76,284,332
Alta.	1,068	78,440,506	14,191	16,824,993	67,429,671	37,747,215	107,313,964
B.C.	1,879	300,841,677	49,768	66,727,184	170,357,991	130,206,263	311,046,478
Yukon& N.W.T.	9	666,281	78	123,276	97,240	152,733	266,745
Totals	**25,513**	**4,095,716,836**	**762,244**	**920,872,865**	**2,449,721,903**	**1,942,471,238**	**4,529,173,316**
Purpose Group							
Producers materials	7,898	1,768,206,231	239,661	295,518,801	758,996,804	691,416,379	1,537,413,098
Food	8,395	486,697,256	105,684	110,646,980	630,874,094	257,344,235	902,729,581
Industrial equipment	1,984	741,060,107	116,843	158,275,589	370,185,647	346,624,745	736,022,066
Vehicles and vessels	356	328,764,370	74,148	111,622,938	247,113,689	191,314,733	444,289,528
Clothing	2,157	199,001,761	105,495	96,188,160	191,503,394	147,994,724	341,716,366
Drink and tobacco	674	207,119,712	24,584	29,255,112	86,023,396	88,918,833	177,434,821
Books and stationery	2,463	146,320,768	42,433	58,969,949	53,062,630	101,101,403	156,160,315
House furnishings and equipment	775	107,533,242	30,319	33,884,337	56,845,708	59,441,959	118,174,369
Personal utilities	627	52,195,231	14,242	15,924,870	30,681,129	33,536,867	65,007,582
Miscellaneous	184	58,818,158	8,835	10,586,129	24,435,412	24,777,360	50,225,590

[1] For and since 1929 the figures for the net value of production represent the gross value less the cost of materials, fuel and electricity. Prior to this, only the cost of materials is deducted. [2] Includes all establishments employing five hands or over. [3] Includes all establishments irrespective of the number of employees but excludes construction, and custom and repair work.

Food Industries.—Some leading industries with gross values of production in 1940 were as follows: slaughtering and meat packing, $228,500,487; butter and cheese, $135,365,356; flour and feed mills, $122,494,759; bread and other bakery products, $82,539,730; biscuits and confectionery, $58,718,262; sugar, $57,274,122; coffee, tea and spices, $55,774,172; fruit and vegetable preparations, $55,179,652; fish curing and packing, $35,110,441; condensed milk, $16,144,185; stock and poultry, $14,321,347; and breakfast foods, $7,645,254. Each of these industries showed a substantial increase over 1939.

Slaughtering and Meat Packing.—Slaughtering and meat packing is the leading industry of the food group. In 1941 its output was valued at $296,240,415, an increase of 60 p.c. over 1939; it furnished employment to 16,260 persons who were paid $23,254,484 in salaries and wages. About $211,000,000 was paid out by packers for live stock. Of the 146 establishments, 42 contributed 91 p.c. of the total output, while 7 of the largest plants had an average production of about $19,000,000. The same is true of employment. Forty-six plants reported 92 p.c. of the total number of persons employed, while 7 of the largest plants averaged 1,003 employees each. During the war years this industry has been called upon to supply ever increasing quantities of products to Great Britain. The agreement for 1942-43 calls for 675,000,000 lb. of bacon and hams.

Dairy Products.—Manufacturing statistics of dairy production are given in the chapter on Agriculture at pp. 76 and 77.

Flour Milling.—The flour-milling industry has a tremendous capacity to produce whatever flour may be needed under present war conditions. In 1940, the maximum daily capacity of the mills was 96,868 bbl. per day of 24 hours, or an annual capacity of over 35,000,000 bbl. Even if the industry were to work at only 75 p.c. of its capacity, over 26,000,000 bbl. of flour could be produced annually.

Canned Foods.—The development in the production of canned foods in Canada has shown remarkable expansion since the beginning of the twentieth century. In 1900 the total value did not exceed $8,250,000, but by 1940 it had increased to $74,544,000. The War, however, is bringing about many changes in the canning industry. Since the supply of tin has been cut off, it has been found necessary to allocate limited quantities to the canners to be used only where necessary. The canning of many products, formerly with large packs, has been prohibited and the packs of others strictly curtailed. Glass, plastics, waxed paper and cardboard containers are being substituted for tins so far as possible. The following figures, which cover a period before these restrictions came into effect, show increases in the value of all canned foods with the exception of fruits and soups.

Principal Foods Canned in Canada, 1939 and 1940

Product	1939		1940	
	Quantity	Value	Quantity	Value
	lb.	$	lb.	$
Fish	108,893,332	15,478,961	133,076,412	17,867,286
Fruits	116,500,115	7,769,005	102,458,862	6,740,876
Vegetables	250,421,723	14,466,052	285,360,938	16,812,119
Meats	8,875,234	2,132,619	10,013,275	2,107,566
Soups	96,630,414	9,256,148	71,110,319	6,912,546
Concentrated milk	166,042,466	11,575,971	193,126,174	14,483,548
Other foods	–	9,113,941	–	9,619,967
Totals	**747,363,284**	**69,792,697**	**795,145,980**	**74,543,908**

Cotton, a War Weapon.—Cotton being 'combed' to remove all impurities. The material will be used for uniforms, aircraft fabric, parachute harness, gas masks, etc.

Courtesy, Wartime Information

Textile Industries.—The need for clothing and equipment for Canada's rapidly expanding Navy, Army and Air Force throws a heavy burden upon the textile industries. These industries are, to a high degree, centralized in the Provinces of Quebec and Ontario. In 1940 the gross value of production was $547,451,110, an increase of 39·4 p.c. over 1939, employment was given to 138,973 persons, and $133,136,316 was paid out in salaries and wages. Of all females employed in the manufacturing industries, almost 50 p.c. were in the textile group.

The variety of individual industries included with those of the textile group is representative of practically all stages of manufacturing necessary to convert the various raw materials into products ready for purchase by the public. Yarn is spun, and fabrics and goods are woven and knitted. Cotton yarn and cloth led the group with a gross value of production amounting to $103,389,868; this was an increase of 46·9 p.c. over the previous year. Men's factory clothing came a close second with a gross production of $100,669,263, an increase of 42·2 p.c. over 1939. Other leading industries, in order named, were: hosiery and knitted goods, women's clothing, woollen cloth, and silk and artificial silk, which showed increases of 20·4 p.c., 15·1 p.c., 91·3 p.c., and 22·7 p.c., respectively.

Iron and Steel Industries.—Canada's steel production in 1942 will amount to about 3,100,000 tons or nearly double the best pre-war tonnage. At the beginning of 1940 the rated capacity of steel furnaces in the Dominion was 2,300,000 net tons, but new installations raised this potential to 3,400,000 tons by the end of October, 1942. Furnaces under construction added considerably to the latter figure before or shortly after the year-end.

Most notable new expansion has been in connection with alloy steels and steel plates. For alloy steels the production capacity and output has been multiplied six times, making this country practically independent in providing alloy steels of the types used in guns, armour plate and machine tools. Prior to the War, the Dominion Foundries and Steel Limited at Hamilton, Ont., was the only maker of steel plates in Canada. In April, 1941, the new 112-inch mill of the Steel Company of Canada came into operation just in time to provide much needed plates for the shipbuilding program and for tanks, guns and carriers. In March, 1942, the Dominion Steel and Coal Corporation Limited at Sydney, N.S., re-opened its plate mill, idle since the last war. Output for steel plates is now nearly six times that of 1939.

The three major steel corporations that constitute the core of the industry in Canada are self-contained in that they process iron and steel from the ore through to the semi-finished and finished articles. The activities of the Steel Company of Canada Limited cover a wide range of products. The main plant at Hamilton, Ont., has 3 iron blast furnaces, 13 open-hearths, and rolling mills for making billets, bars, wire rods, sheets, plates and light shapes. Its capacity, the largest in Canada, is about 1,020,000 net tons of ingots annually. In addition, it operates several works in Ontario and Quebec for the production of wire, fencing, nails, screws, bolts, nuts, forgings, pipe, horseshoes, etc. The Algoma Steel Corporation Limited has 4 blast furnaces, 12 open-hearths, and also rolling mills. Its capacity is about 720,000 tons of ingots yearly and its chief products are billets, rails and rail fastenings, carbon and alloy merchant bars, tinplate, black sheets, structural steel, and sheet piling. It is Canada's chief producer of heavy structural shapes which are made in all standard sizes and forms. The Dominion Steel and Coal Corporation Limited operates 3 blast furnaces and 16 steel furnaces with yearly ingot capacity of 750,000 tons. Its rolling mill makes billets, rails, rail fastenings, merchant bars, wire rods and plates and in other plants or plants of subsidiary companies it makes wire, fencing, nails, and similar lines.

In addition to these larger concerns, there are 31 other steel makers which use electric or open-hearth furnaces to produce steel from pig-iron and scrap. In all, there are 121 steel furnaces in Canada, including 50 open-hearth units, 68 electric units and 3 converters.

Iron blast furnaces are operating at capacity and output in 1942 will amount to about 2,000,000 net tons compared with the pre-war record of 1,210,000 tons. Two new furnaces are under construction.

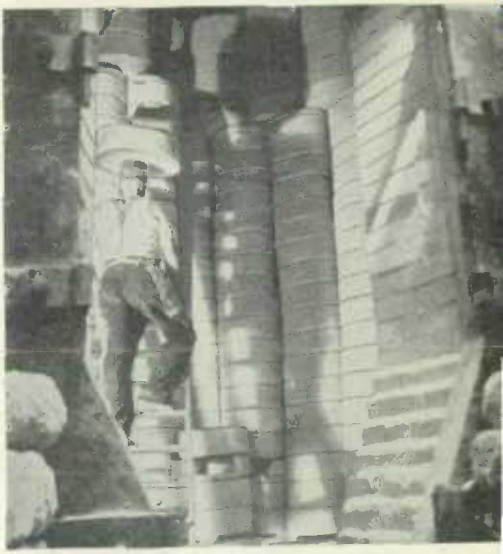
In the secondary industries there has been tremendous expansion. Two years ago shipbuilding was practically inactive; at present there are 40,000 workers in 21 major and 58 smaller yards. The aircraft industry, which had fewer than 1,000 persons on the payroll before the War, now has 55,000 workers in main and sub-assembly plants. The automobile industry has switched entirely to military vehicles, of which more than 300,000 have been produced to date. Guns and shells are being produced in large quantities, and the output of machine tools, cutting tools, gauges, jigs and fixtures has been stepped up enormously to meet the requirements of the war program.

Chemicals.—Canada's chemicals and explosives program has probably shown more spectacular expansion than any other phase of her war effort. Prior to the declaration of war, military explosives were not made in Canada except on an experimental scale in one small unit, and service ammunition was made only in one plant; now, in October, 1942, the output of heavy ammunition is at the rate of 27,000,000 rounds per year and small arms ammunition at the rate of 1,500,000,000 rounds per year, this over and above the large-scale production of aerial bombs, mines, depth charges, grenades, pyrotechnics and similar materials. This achievement has necessitated capital expenditure of more than $125,000,000 on plant expansions and new production, and has involved the manufacture of huge tonnages of cordite, T.N.T., ammonium nitrate, etc., as well as certain special chemicals not previously made in this country.

Recent announcements indicate this program is being further expanded by the addition of 10 new plants which, when completed, will make 38 projects in all. Now operating are 28 units, 15 of which are classed as major undertakings involving

Canadian-Made Pottery.—Difficulties of overseas transportation have stimulated the manufacture of domestic pottery. *Top:* Wet clay being made into plates. *Centre:* Trays containing 'green' clay products being stacked in a kiln for firing when the temperature is raised to 1,800 degrees F. *Bottom:* Dinnerware being stamped with a gold design.

Courtesy, Canadian Industries Limited



heavy expenditures and large numbers of employees. Three are producing explosives, 3 are mammoth shell-filling plants, one is a large fuse-filling plant, and the others make chemicals of various kinds. Of the 13 smaller projects, 8 are making chemicals, one makes fuse powders and 4 are turning out or filling smoke bombs. Three of the new units under construction are for large-scale alkylation of petroleum fractions for high-octane aviation gasoline.

Meanwhile, the established chemical industries, although overshadowed by these new war-time developments, have been operating at record levels. Heavy chemicals increased 59 p.c. in 1941 as compared with 1940; paints advanced 27 p.c. in value, soaps rose 23 p.c. and medicinals 23 p.c. Altogether, the value of chemicals and allied products was $268,000,000 in 1941, an advance of 38 p.c.

Monthly employment figures indicate the rapid increase in operations as new plants came into production. On Jan. 1, 1940, the number of workers in the chemicals and allied products group was 22,066; on Jan. 1, 1942, the number was 55,942; and on Oct. 1 it was 86,010.

Synthetic Rubber.—When the Japanese overran British Malaya and adjoining territories, where natural rubber is grown, approximately 90 p.c. of the United Nations' natural rubber supply was automatically cut off. The gigantic task of adjusting war programs had to be undertaken at short notice and an increase in synthetic rubber production that would normally have taken about twelve years had to be brought about in two.

A plan is now well under way that is estimated to meet present and future war requirements, and at the same time take care of essential civilian needs. Naturally,

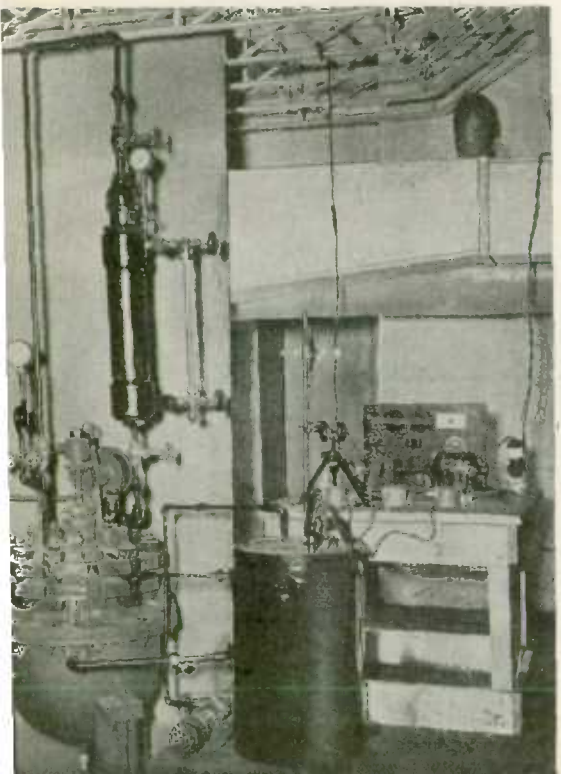
in an emergency of this kind all resources must be pooled and consequently Canada and the United States are co-operating closely both in the manufacture of synthetic rubber and in the conservation of the present rapidly dwindling stocks of natural rubber. A plant is being constructed in Canada with a production capacity of over 30,000 tons per year, starting with petroleum as the raw material. It is expected that this plant will be ready before the supply of natural rubber runs out.

The type of synthetic rubber to be made in Canada to meet war needs is called Buna S. Since over 80 p.c. of all rubber consumed is used in tires, the type of rubber to be manufactured on the present large scale had to be satisfactory for that purpose. Buna S was chosen principally on account of its qualities of resistance to abrasion.

A number of types of synthetic rubber are made from butadiene, a gas that may be made in various ways: from crude petroleum, from coal and limestone, or from alcohol or butylene glycol obtained by the fermentation of agricultural products such as wheat, corn, etc. Butadiene, a gas at ordinary temperatures, becomes liquid when subjected to slight pressure. When treated by a certain process known as polymerization, this liquid is converted into synthetic rubber. Other chemicals may be co-polymerized with butadiene in order to improve the product, giving many types of rubber, each of which has specific properties and uses. Buna S is the butadiene-styrene modification; other types are Buna N, Butyl, Neoprene, and Thiokol.

Natural rubber is more versatile than any of the synthetics. Buna S, for example, is good for tire treads, but is more limited in its applications than natural rubber. For instance, natural rubber is excellent for all the parts of a pneumatic tire, but there is some doubt in the minds of the experts as to whether Buna S would be the best material for the carcass. Several different types of synthetic rubber will probably be required to take the place of the natural product and the production of such types is being developed to meet the need. Many of them will be produced only in the United States, but will be made available to Canada in the quantities necessary for carrying on the War.

Experimental Apparatus for Making 'Buna S' Synthetic Rubber.
Courtesy, National Research Council



The United Nations have seen to it that natural rubber will be available as long as the War lasts for tank tires and suchlike for which only natural rubber appears now to be suitable. Products made from synthetic rubber are less resilient than those made from natural, and highly resilient rubber is necessary for the solid tires used on tanks; otherwise the treads would become overheated at high speeds and the excessive heat would destroy the rubber. Synthetic rubbers, however, have definite advantages over natural rubber in many respects:

almost without exception they have better resistance to ageing, sunlight, ozone, oils and chemicals.

Research.—The Government is tackling the problem of the rubber shortage from all angles. Collection and reclamation of waste rubber is being carried out on a large scale. The use of natural rubber for strictly civilian needs has been stopped, and the National Research Council rubber laboratory, in co-operation with other Government Departments, has carried out, and is still working on, numerous investigations to determine whether the percentage of rubber in war products can be reduced with safety. As the new synthetic rubbers arrive, the rubber laboratory will help in deciding the best type to be used for each war product. The National Research Council and the Experimental Farm are collaborating on the problem of cultivating rubber-bearing plants in Canada and extracting rubber from them. Researches are also being carried out to develop new and better methods of making butadiene synthetic rubber from Canada's agricultural products.

Leading Individual Industries

The incidence of the depression between 1930 and 1936 resulted in a rearrangement in the ranking of many industries. The suspension of capital expenditures greatly reduced the output of such industries as sawmills, electrical equipment, automobiles, primary iron and steel, etc., but under the impetus of war production these industries, which are engaged in producing the equipment needed by the Armed Forces, have again advanced to high positions.

Principal Statistics of Fifteen Leading Industries, 1940

Industry	Establishments	Capital	Employees	Salaries and Wages	Cost of Materials	Gross Value of Products
	No.	$	No.	$	$	$
Non-ferrous metal smelting and refining	14	234,826,742	13,466	21,766,197	187,790,596	305,360,547
Pulp and paper	103	642,979,942	34,719	56,073,812	108,758,862	298,034,843
Slaughtering and meat packing	146	73,779,777	14,301	19,441,361	191,484,016	228,500,487
Automobiles	10	78,816,499	16,798	31,110,945	128,833,690	189,807,555
Butter and cheese	2,484	64,327,705	18,039	17,610,586	96,893,205	135,365,356
Sawmills	4,675	91,602,899	39,501	34,021,825	70,948,598	134,762,893
Electrical apparatus and supplies	194	118,825,205	25,120	33,246,655	58,371,201	130,001,457
Flour and feed mills	1,027	52,170,492	6,215	7,101,367	96,294,284	122,494,759
Petroleum products	49	76,581,743	5,156	8,808,537	94,860,521	122,212,800
Primary iron and steel	54	133,844,814	17,774	29,207,036	54,045,692	114,598,409
Cotton yarn and cloth	37	87,578,818	23,616	23,110,839	53,958,165	103,389,868
Clothing, men's factory	378	48,843,572	26,866	25,223,961	60,087,644	100,669,263
Railway rolling-stock	35	94,375,351	21,483	32,349,509	52,289,540	95,341,712
Machinery	235	92,896,451	18,145	26,016,051	30,675,072	84,260,652
Rubber goods, including footwear	52	70,588,546	14,297	16,834,914	38,228,145	83,020,721
Totals, Fifteen Leading Industries						
1940	**9,493**	**1,962,038,556**	**295,496**	**381,923,595**	**1,323,519,231**	**2,247,821,322**
1939	**8,827**	**1,747,543,258**	**251,382**	**267,448,006**	**990,108,323**	**1,677,766,110**
Grand Totals, All Industries						
1940	**25,513**	**4,095,716,836**	**762,244**	**920,872,865**	**2,449,721,903**	**4,529,173,316**
1939	**24,805**	**3,647,024,449**	**658,114**	**737,811,153**	**1,836,159,375**	**3,474,783,528**
Percentages of Fifteen Leading Industries to all Industries, 1940	37·2	47·9	38·7	41·4	54·0	49·6

Manufactures in Leading Cities

The following table gives the principal manufacturing statistics for all cities with a gross production of over $20,000,000 in 1940.

Cities of Canada with a Manufacturing Production of Over Twenty Million Dollars in 1940

NOTE.—Arvida, Que., and Trail, B.C., each had a gross production of over $20,000,000 in 1940, but statistics for these places cannot be published because less than three concerns carry on the industries operating in these cities.

City	Establishments	Capital	Employees	Salaries and Wages	Cost of Materials	Value of Products
	No.	$	No.	$	$	$
Montreal	2,519	475,575,804	118,774	138,118,813	334,350,566	604,806,394
Toronto	2,911	500,559,305	112,136	145,538,148	306,675,426	595,913,172
Hamilton	474	230,821,923	39,081	54,139,253	106,595,186	212,587,274
Windsor	215	102,896,682	20,916	37,260,970	112,991,063	194,174,159
Vancouver	849	101,429,495	20,767	26,502,084	70,468,864	120,981,388
Winnipeg	659	79,740,380	19,050	22,690,848	56,508,329	98,308,806
Montreal East	10	44,172,604	1,891	2,852,250	57,784,411	70,337,531
Oshawa	46	31,401,748	6,867	10,814,255	45,019,798	65,048,726
Kitchener	150	40,932,334	10,501	11,492,395	28,741,353	53,728,681
London	235	41,909,331	10,208	12,557,137	26,230,025	53,579,299
Quebec	308	58,044,686	11,697	11,377,947	22,182,428	44,175,151
New Toronto	21	30,528,301	3,819	6,548,590	22,376,915	41,665,371
Peterborough	78	23,744,624	6,309	7,629,448	22,004,240	39,965,533
Calgary	190	29,048,415	4,628	6,288,337	24,293,783	39,001,131
Edmonton	186	20,874,480	4,816	6,132,819	25,750,189	37,909,520
Three Rivers	50	63,466,383	5,911	7,276,843	14,905,076	37,465,309
Ottawa	204	35,038,009	8,616	10,652,640	17,646,602	36,645,177
St. Catharines	83	29,759,722	6,876	9,172,406	18,289,231	35,513,200
Brantford	107	34,774,198	7,915	9,304,572	17,015,045	35,300,186
Welland	49	32,900,139	5,348	7,243,796	16,542,192	34,946,997
Sault Ste. Marie	46	54,114,204	4,980	7,771,169	16,593,014	34,801,345
Sarnia	43	20,753,376	3,284	4,633,751	22,964,078	33,396,402
Niagara Falls	58	37,980,740	3,954	5,489,347	11,284,141	30,969,734
St. Boniface	46	11,181,997	2,063	2,685,961	22,373,569	29,408,393
Sydney	28	34,114,984	2,711	4,570,133	14,156,910	28,670,649
Saint John	114	21,514,318	3,862	4,332,189	16,947,198	26,733,304
Lachine	27	22,141,280	3,795	6,777,977	11,283,266	25,554,115
Sherbrooke	71	23,770,530	6,400	6,594,367	12,054,997	25,251,328
Guelph	83	17,303,046	5,306	5,879,046	11,655,817	24,150,589
Shawinigan Falls	31	41,191,397	3,486	4,810,238	9,093,676	22,983,735
Regina	104	11,421,737	2,244	3,028,285	14,319,231	22,294,954

Conditions During the Years 1937-42

Perhaps the best all-round barometer of conditions is afforded by the indexes of employment maintained from month to month in the Dominion Bureau of Statistics. These are based on returns received from establishments having 15 hands or over and include the great majority of employees. The indexes are given below for the latest six years.

Monthly Indexes of Employment in Manufactures, 1937-42

(1926 = 100)

Month	1937	1938	1939	1940	1941	1942	Month	1937	1938	1939	1940	1941	1942
Jan. 1	102·4	108·6	104·3	118·2	142·5	187·1	July 1	119·0	111·8	111·3	130·3	172·4	209·5
Feb. 1	105·3	110·3	106·0	120·5	147·4	191·2	Aug. 1	118·1	110·0	112·8	134·4	176·8	212·4
Mar. 1	107·6	110·5	107·0	122·6	150·8	195·7	Sept. 1	121·2	113·8	115·3	138·4	181·4	215·6
April 1	110·8	110·8	107·1	123·4	158·2	199·4	Oct. 1	121·7	112·5	119·7	143·8	184·9	218·3
May 1	113·8	110·6	108·4	125·7	162·3	202·3	Nov. 1	119·0	110·9	122·1	144·6	187·5	218·6
June 1	117·9	112·3	111·4	129·2	168·0	205·9	Dec. 1	116·3	110·1	122·2	144·7	188·4	221·7

CHAPTER X

Transportation—Communications

Steam Railways.—Over half of the railway mileage in Canada is owned and operated by the Dominion and Provincial Governments and the remainder by incorporated companies. The mileage of railways publicly operated as at Dec. 31, 1941, was as follows: Dominion, 22,586 miles; provincial, 922 miles; municipal, 92 miles; total 23,600. The mileage operated by incorporated companies was 18,841, the principal private system being the Canadian Pacific Railway with 16,667 miles of line.

The effect of the War on freight and passenger traffic of the railways was more evident in 1941 than in 1939 or 1940, freight revenues increasing 17 p.c. in 1940 and 26 p.c. in 1941, and passenger revenues increasing 18 p.c. in 1940 and 40 p.c. in 1941. Increases in passenger travel were even greater than these revenue data indicate. The round-trip fare for members of the Armed Forces on leave, which had been reduced in November, 1939, to the equivalent of a one-way fare, was reduced on July 10, 1941, by a third; the Government pays half of this reduced fare and the passenger the other half. This caused a reduction in the average revenue per passenger mile for the year to 1·86 cents, which is the lowest since 1907. It also increased the revenue passenger miles by 47 p.c. over 1940 traffic, although this was still below the records of 1919 and 1920.

Railway employment increased to 148,746 from 135,700 in 1940. Although this was 21 p.c. fewer than for 1929 most of the difference was in maintenance employees and despite a reduction of train crews the passenger miles increased by 11 p.c. and revenue freight ton miles by 43 p.c., the latter being a new all-time high. These increases continued on through 1940 as indicated by the following monthly data:—

Railway Statistics, by Months, 1940-42

Month	Railway Gross Operating Revenues			Total Revenue Freight Loadings		
	1940	1941	1942	1940	1941	1942
	$ '000	$ '000	$ '000	tons '000	tons '000	tons '000
January	30,496	36,113	45,422	5,244	5,936	6,845
February	30,000	34,620	44,044	5,185	5,547	6,571
March	30,145	40,613	50,858	4,657	6,317	7,287
April	29,916	41,887	50,597	4,927	6,404	7,391
May	34,630	46,595	53,036	6,242	7,722	7,722
June	36,914	44,817	55,247	6,285	7,367	7,924
July	38,398	45,442	57,529	6,687	7,502	8,090
August	37,409	46,524	58,881	6,659	7,704	7,777
September	37,319	47,215	58,590	6,629	7,717	7,692
October	40,504	51,239	61,281	7,237	8,443	8,749
November	38,869	48,219	—	6,952	8,110	7,970
December	40,221	50,050	—	6,245	7,347	7,460

Canadian Railways and the War.—Transportation of freight and passengers by the Canadian railways is being maintained at a high standard of efficiency and makes a vital contribution to the country's war effort. Prior to the outbreak of hostilities in September, 1939, track, motive power and rolling stock were maintained in good order and all were in condition to meet the constantly increasing volume of traffic imposed by the War. To-day the railways are handling traffic double that of the peak movement during the First World War and 50 p.c. higher than that in 1929.

One of Canada's Latest Strato-Clipper Models Flying above the Clouds.
Courtesy, Monetary Times

THE ALASKA HIGHWAY

This strategic military artery was officially opened on Nov. 20, 1942. The record-breaking speed in construction was made possible by the extensive use of mechanized equipment.

Top: Diesel tractors with trailbuilders grading a stretch of road.

Centre: Substantial loads of equipment were moved over pontoon bridges which could be dismantled and moved to new locations when needed.

Bottom: Portable sawmills proved invaluable in utilizing the timber available on the job.

(see p. 122)

Courtesy, Engineering and Contract Record

The Transport of Troops by Rail.—Canadian railways have been adjusted to troop transport (see text). *Top:* A commissary kitchen-car. *Centre:* A long-table dining car. *Bottom:* The latest method of transporting hospital cases; at the far end of the car is a dispensary and accommodation for doctor and nurses.

Courtesy, Canadian National Railways

They not only serve the war industries of the country but are the arteries which supply the army camps and air-training depots.

Rehabilitated cars and locomotives, new cars, some of them of new design, and new and more powerful locomotives have helped to solve the problem of growing traffic. Thirty-five new locomotives were added during 1942 to the already large fleet of the Canadian National System alone. These engines, latest examples of the "Northern" type (see illustration on p. 121), possess new methods of steam supply so increasing the power of the individual units that in daily freight service they haul loads of 6,000 or more gross tons. It is astonishing to know that the average freight-train load has doubled since the First World War, that the speed of locomotives has been increased by 60 p.c. and that the consumption of coal per ton of freight hauled has been greatly reduced.

War services have imposed numerous tasks on the railways and have required the development of special units of equipment. In order to feed troops in movement on trains, commissary kitchen-cars are employed. The food is prepared in the 'rolling' kitchen and taken by orderlies to the men at their seats, the requisite food being moved from the kitchen-car in 20 minutes. These kitchen-cars are well equipped with step-saving and labour-saving devices, including special steam cookers capable of dealing with 600 potatoes at one time. The cookers are also used for meats, poultry and puddings. For military parties travelling in smaller numbers, the long-table dining-car is used; it provides comfortable seating for 54 men.

For the purpose of providing quicker meal service on crowded trains at moderate prices, the 'cafe

car' or 'coffee-shop car' has been developed. Usually dining-car service is rather leisurely, but by offering simpler meals and by installing a system to increase the speed of service, these cars can provide for a larger number of patrons within the same meal-time period. The cafe car has a kitchen in the centre with dining sections at each end and can accommodate 40 or so passengers at one time. These cars are in operation in services east of Montreal where passenger traffic is very heavy.

Canadian railways are doing much more than looking after the transportation of passengers and freight, the carrying of messages and the operation of hotels, etc. They have assisted industry in getting new plants located and established, they are building guns, gun carriages, ships and secret devices, and their own steamers have gone into war service. Railway management and railway labour are doing their part in Canada's war effort.

Electric Railways.—Electric railways continue to be replaced by motor-buses except in the larger cities where war industries have increased city traffic to the capacities of the street railway systems. In Montreal traffic increased by 7·5 p.c. in 1940, bringing total passengers carried to 225,764,000; in Toronto by 8·4 p.c. with a total of 173,640,000 passengers; in Halifax the increase was 24 p.c.; and in Ottawa 16 p.c.

Roads and Highways.—Construction of roads suitable for motor traffic has been one of the principal items of provincial expenditures during the past twenty years. The Dominion Government has built roads in National Parks and has granted subsidies to the provinces, first in 1920 and again as an unemployment relief measure in 1930-39, but has not constructed any rural roads outside of Dominion lands.

The mileage at the end of 1941 was 120,971 miles of surfaced roads, and 440,518 miles of earth roads. Of the surfaced roads, 104,733 miles were gravel or crushed stone; 13,800 bituminous surfaces; 2,438 portland cement, concrete and asphalt.

The expenditures for 1941 amounted to $75,989,185, including $33,605,936 for construction of roads, $3,622,506 for construction of bridges, $33,334,432 for maintenance of roads, $2,912,210 for maintenance of bridges, $9,512 for footpaths and sidewalks, and the remainder for administration and general expenses.

The Northern Type of Locomotive Acquired in 1942 by the Canadian National Railways. — Streamlined steam-piping lowers the resistance to the flow of steam, increasing the tractive effort and resulting in fuel economy.

Courtesy, C. N. R.

The Alaska Highway.—The Alaska Highway, a 1,600-mile roadway, 24 to 36 feet wide, extends from Fort St. John, B.C.,* through Whitehorse, to Fairbanks, Alaska. It was virgin territory, and a pioneer air route, in the spring of 1942; on Nov. 20, 1942, it was officially opened for wheeled traffic. About 10,000 United States engineer troops and 4,000 civilians, of whom half were Canadians, hewed their way through the bush, bridged the rivers, overcame mountain grades and surfaced a roadbed, to permit a continuous journey by car before the year was out.

The maximum grade in hill country is 7 p.c.; in foothill country, 5 p.c. The Agreement between Canada and the United States requires that the United States complete the work and maintain it for six months after the War after which all sections in Canada will be returned to Canadian jurisdiction.

Motor-Vehicles.—The number of motor-vehicles registered in Canada has increased steadily and rapidly from 3,054 in 1908 to 276,893 in 1918. The highest point in the pre-depression period was reached in 1930 when the total registrations numbered 1,232,489 cars, but this figure has been exceeded in every year since 1935.

Motor-Vehicles Registered in Canada, 1935-41

Year	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Canada[1]
1935....	8,231	43,952	31,227	170,644	564,076	70,660	94,792	93,870	98,411	1,176,116
1936....	7,632	46,179	33,402	181,628	590,226	74,940	102,270	97,468	106,079	1,240,124
1937....	8,011	50,048	36,780	197,917	623,918	80,860	105,064	100,434	116,341	1,319,702
1938....	7,992	51,214	37,110	205,463	669,088	88,219	109,014	107,191	119,220	1,394,853
1939....	8,040	53,008	38,116	213,148	682,891	88,864	119,018	113,702	122,087	1,439,245
1940....	8,070	57,873	39,000	225,152	703,872	90,932	126,970	120,514	128,044	1,500,829
1941....	8,015	62,805	41,450	232,149	739,194	96,573	131,545	126,127	134,499	1,572,784

[1] Includes Yukon.

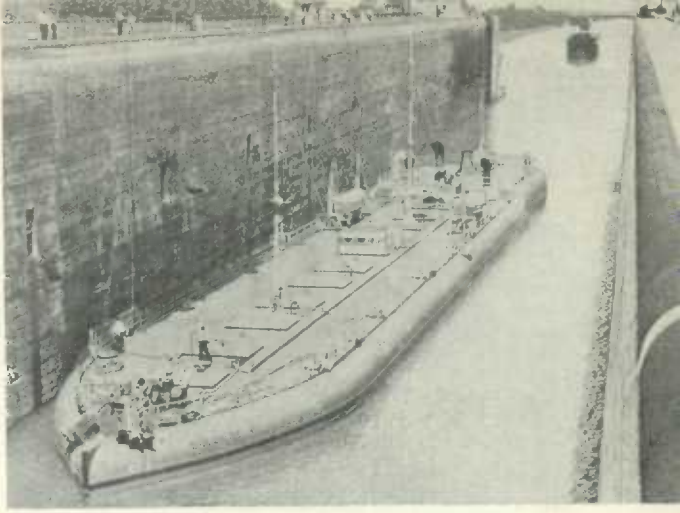
Since 1941 there has been a drastic curtailment in the use of motor-vehicles for passenger transportation. This has applied not only to privately owned passenger cars but also to bus transportation and taxi service. This has been a direct result of the diversion of all manufacturing facilities to war production and of the rigid restrictions in the use of rubber and gasoline for any but vital war needs.

Provincial revenue from motor-vehicles for 1941 totalled $91,139,300, including: $30,282,117 from motor-vehicle registrations, drivers' permits, etc., and $59,579,356 from gasoline tax. During 1941 there were 1,848 persons killed in motor-vehicle accidents, which is the largest number yet recorded.

Canals.—There are six canal systems under the Department of Transport, namely: (1) between Fort William and Montreal, (2) from Montreal to the International Boundary near Lake Champlain, (3) from Montreal to Ottawa, (4) from Ottawa to Kingston, (5) from Trenton to Lake Huron, and (6) from the Atlantic Ocean to Bras d'Or Lakes in Cape Breton. These canals have opened to navigation from the Atlantic about 1,890 miles of waterways. Under the Department of Public Works or other authority are minor canals and locks that facilitate local navigation.

* Dawson Creek, about 30 miles to the southwest, is the railhead from which supplies are trucked in to Fort St. John. The existing road between Dawson Creek and Fort St. John has been improved and to all intents and purposes forms part of the main highway.

A Convoy of R.C.A.F. Trucks Passing Along the Completed Alaska Highway.



A Modern Inland-Waterways Freighter.—The holds of this vessel are nickel-lined tanks. She can carry a load of caustic soda or kerosene, be unloaded and steam-cleaned and, a few hours later, load wheat.

Courtesy, Canadian Geographical Journal

The Great Lakes and St. Lawrence River form one of the busiest waterways in the world. More traffic passes up and down the Detroit River than any other waterway and the traffic through the canals at Sault Ste. Marie in 1929 reached a peak of 92,616,898 tons, more than through the Panama and Suez Canals combined. Due to heavy war requirements for iron ore this margin was increased to a total of 111,120,556 tons in 1941.

The maximum draught of vessels plying between the lakes is governed by channels in the Detroit and St. Mary's Rivers, and is limited to about 21 feet. Since 1932 when the New Welland Ship Canal, with 25 feet in the stretches between locks (the locks have 30 feet of water above the sills), was opened, larger upper-lake vessels have passed down as far as Prescott. The St. Lawrence canals have a depth of 14 feet (reduced in periods of low water) so that ocean vessels, except of small tonnage, cannot sail up into the lakes; a few such vessels were engaged in the Great Lakes traffic for several years, bringing over cargoes from European ports. Traffic using the St. Lawrence canals reached a high record in 1938 with 9,236,318 tons, which dropped to 6,929,569 tons in 1941. Traffic using the Welland Ship Canal has increased steadily, the total of 13,230,175 tons for 1941 being more than double the 1930 traffic and over five times that for 1920.

Shipping.—Canadian shipping is divided into two classes: (1) foreign service, and (2) coasting service. The first is subdivided into: (*a*) seagoing, i.e., between Canadian ports on the Pacific and Atlantic Oceans and on the St. Lawrence up

Vessels Entered at Canadian Ports, 1935-41

Fiscal Year	Foreign Service[1]		Coasting Service		Total	
	No.	Tons Register	No.	Tons Register	No.	Tons Register
1935	34,918	41,852,110	68,441	43,146,037	103,359	84,998,147
1936	37,800	41,746,953	69,809	42,979,361	107,609	84,726,314
1937	41,755	45,030,914	73,033	45,973,830	114,788	91,004,744
1938	42,582	45,603,055	75,537	44,471,834	118,119	90,074,889
1939	43,601	44,775,116	73,386	45,386,457	116,987	90,161,573
1940	46,241	46,666,396	78,212	44,361,232	124,453	91,027,628
1941	25,122	32,579,900	79,951	50,471,166	105,073	83,051,066
Calendar year 1941[2]	26,203	31,452,400	77,592	48,111,082	103,795	79,563,482

[1]Sea-going and inland international.

[2]These statistics will be on a calendar-year basis from 1941.

to Montreal, including fishing at sea and at ports in other countries; and (*b*) inland, i.e., between Canadian and United States ports on the Great Lakes and connecting rivers. The second is service between Canadian ports, including fishing in Canadian waters.

Shipping statistics are collected only from ports at which there is an official of the Customs and Excise Division of the National Revenue Department, and consequently do not include shipping on Mackenzie River, Lake Winnipeg, etc.

Air Navigation.—Among the outstanding events in 1942 was the completion of terminal airports on the new airway running between Edmonton and the Alaska boundary. Each of these airports has been equipped with the latest type radio range station. Additional intermediate aerodromes, with an associated radio range station, are under construction. When these intermediate aerodromes and range stations are completed, aircraft using the route will be provided with radio coverage and landing facilities second to none.

This airport project, which was inaugurated at the beginning of hostilities, has been of inestimable value in pushing the Alaska Highway through in such record time. The airports provided not only aerial supply bases for road-building operations, but the experience gained by the personnel who freighted equipment to the more isolated airport sites was used to great advantage by the U.S. Forces in building up of stocks of supplies during the winter.

The British Commonwealth Air Training Plan is rapidly producing air crews and ground personnel for the Empire, and graduates are in action on all Fronts. Expansion of the Plan is still under way.

Transatlantic ferry flights have been carried out in great numbers. However, with the African theatre of war coming into such prominence, it became necessary to divert aircraft from the north Atlantic operations to more southerly routes.

Trans-Canada Airway System.—The Trans-Canada Airway System is now in operation all the way across the continent from Vancouver to Toronto, Montreal, Moncton and Halifax, also from Moncton to St. John's, Newfoundland, and from Toronto to London and Windsor on the west and New York on the east.

Intermediate aerodromes lighted for night flying are established at approximately 100-mile intervals. Meteorological services provide weather maps four times daily, and district forecasts for the ensuing six hours. As part of the facilities of the Trans-Canada route and its feeders, there are now in operation 43 radio range stations at approximately 100-mile intervals, except in the mountain regions where closer spacing is necessary.

OPERATION OF TRANS-CANADA AIRWAY SERVICE

Montreal-Vancouver[1]	2 trips daily each way
Halifax-Montreal[2]	2 trips daily each way
Montreal-Toronto[3]	2 trips daily each way
Toronto-Windsor[4]	2 trips daily each way
Toronto-New York[5]	2 trips daily each way
Lethbridge-Edmonton	2 trips daily each way
Moncton-Sydney-Gander-St. John's, Nfld.	1 round trip daily

[1] One schedule connects with Halifax. [2] Both schedules continue through to Toronto. [3] One trip goes through to Windsor; two are transcontinental; two connect with Halifax, making a total of five trips daily. [4] This connects with trips from Montreal and Ottawa. [5] Connects with all transcontinental trips coming into and leaving Toronto.

Canadian Airways Limited operates one daily service on floats from Vancouver to Victoria, and another on wheels from Vancouver to Patricia Bay, as a continuation of the transcontinental service to Vancouver Island. A daily service is operated

by Prairie Airways Limited from Regina to Moose Jaw, Saskatoon, Prince Albert, North Battleford, and return, connecting with the through service of Trans-Canada Air Lines at Regina. The Maritime Airways Limited operates a daily service from Moncton to Summerside and Charlottetown and from Moncton to Saint John, N.B. Yukon Southern Air Transport Limited runs a 6-day service from Edmonton to Fort St. John and Whitehorse, with a connecting trip from Vancouver to Fort St. John.

Essential services are still being rendered to isolated districts in the remote parts of Canada. Due to the scarcity of equipment and personnel it has been necessary to cut down some of the services with a view to eliminating over-lapping and duplication. The fact that Canadian Pacific Airways Limited has purchased most of the airline companies operating in outlying areas has assisted considerably in promoting this process of consolidation.

Civil Aviation Statistics.—The mileage flown by aircraft increased from 185,000 in 1922 to 12,481,741 in 1941, when 208,076 passengers, 16,545,756 lb. of freight, and 3,388,634 lb. of mail were carried.

Telegraphs.—Six telegraph systems are operated in Canada, five in conjunction with the railways and one small system operated independently. The Western Union, a United States company, operates lines across Canadian territory; the Canadian Marconi Company operates a wireless system; and three cable companies, in addition to the telegraph companies, operate cables from Canadian stations. In all, 22 cables

Providing Storm-Proof Communications

Long-distance telephone lines are being laid underground in order to avert damage by wind and sleet. *Lower right:* The lead-covered cable being drawn into a conduit. Great care is necessary in this operation; a cable may carry 1,800 or more pairs of insulated wires, breakage of any of which would cause complications.

Courtesy, Bell Telephone Company.

The Blattnerphone Installation at Ottawa.—This unit picks up broadcasts and records them for later release. Many of the BBC broadcasts heard in Canada have been recorded at the CBC Ottawa studios.

Courtesy, Canadian Broadcasting Corporation

are operated between Canada and England, Azores, Australia, New Zealand, Newfoundland, St. Pierre and Miquelon, and Bermuda, and 2 cables between North Sydney and Canso, N.S.

These systems operate 374,374 miles of telegraph wire in Canada, 5,420 miles outside of Canada, and 32,799 nautical miles of submarine cable between Canada and other countries. Multiple circuits normally produce 660,278 miles of channels for telegraphic use. During 1941 a total of 14,281,570 telegrams and 2,251,979 cablegrams, excluding messages between foreign countries, were handled over these wires.

Telephones.—There were 3,193 telephone systems in Canada in 1940, operating 5,681,594 miles of wire and 1,461,038 telephones. The estimated number of conversations during the year was 2,899,103,000 or 1,984 per telephone. Almost half of the telephones are dial telephones and are operated by automatic switchboards, the increase in dial telephones during 1940 being 76,872 as against a decrease of 13,106 telephones connected with manually operated switchboards.

National Radio.—In the six years that have elapsed since November, 1936, when the Canadian Broadcasting Corporation succeeded the former Canadian Radio Broadcasting Commission, many changes in radio-listening habits throughout the Dominion have been noted. The progressive step of setting up a publicly owned broadcasting organization grew out of a national necessity for, at the time of the CBC's inception, less than half of the country was effectively covered by Canadian broadcasting stations. In the subsequent years, Canadian radio, under the supervision of the CBC, has steadily increased effective coverage up to a point where, to-day, less than 4 p.c. of the population is to be found in unfavourable listening areas for Canadian radio presentations.

Established on a basis similar to that of the British Broadcasting Corporation, the CBC has a Board of nine Governors, a General Manager and an Assistant General Manager. The Corporation operates under the Canadian Broadcasting Act, 1936, which gives it regulatory powers over all broadcasting stations in Canada in so far as programs are concerned.

The members of the Board of Governors are appointed for three years, in rotation, to act as "trustees of the national interest in broadcasting". They are responsible for the policies of the Corporation, and for guaranteeing to the public that broadcasting will be administered in a non-partisan and business-like manner. The CBC is responsible to Parliament through the Minister of War Services.

Transmission Facilities.—Five time zones, ten thousand miles of interconnecting transmission lines, the war-time scarcity of new equipment and facilities, regional preferences and new governmental regulations all make the problem of getting the program to the listener a complex one. To carry its sustaining features and a limited number of commercial programs, the CBC has set up a national network made up of four 50,000-watt and six other transmitters owned and operated by the CBC which, together with supplementary stations, includes most of the privately owned transmitters throughout the country. Several low-power short-wave stations augment this network and carry CBC programs to parts of the country not served by domestic transmitters. Plans are being laid at the present time for the erection of a powerful international short-wave transmitter that will give Canada a world-wide audience.

Programs.—During the fiscal year ended Mar. 31, 1942, the CBC's total program production amounted to 12,760 hours, representing 40,886 programs. In six years of operation this is the highest figure yet reached by the CBC, which now, in one year, does more network broadcasting than was done in any two years preceding its inception. The average daily service throughout the year amounted to 34½ hours of unduplicated programs over national, regional, French and combined networks. Many broadcasts on the English networks are also heard on the French.

Because of the difficulties associated with adjusting program schedules to five different time zones, a system of 'staggering' has been developed. This has meant a reduction over the past year of programs designed for national network release, and corresponding increases in each of the regions of programs topical in nature and designed for the type of audience and time of day in the areas where they are heard. This has had the effect of encouraging local talent and increasing public interest in 'home-grown' programs.

CBC and the War.—To-day, while the task of gradually improving programs goes steadily on, the CBC recognizes that its chief responsibility is to the Canadian people at war. With industry and the Armed Forces absorbing larger and larger sections of the community, the task of providing accurate information about events at home and abroad and of retaining the links that bind Canadians in other parts of the world with their homeland takes precedence over all other activities. Musical, variety, symphony, actuality, dramatic and such programs all play an important part in helping to provide the element of relief so necessary if industrial and farm production is to be maintained and increased. Such programs as those devoted to the interests of farmer and labour take on a new significance in time of war and cannot be considered less than essential to the national effort. Naturally, too, programs designed to interpret the latest governmental regulations and legislation, as they affect the individual, find place in broadcasting schedules. Many of these are designed to inspire confidence, strengthen personal effort and stimulate the desire to play the fullest possible part in the country's struggle.

In Great Britain, the CBC Overseas Unit has played an important part in helping to bridge the expanse separating Canada and the Motherland. One of the CBC members attached to the Unit accompanied the Canadians on the Dieppe raid in August, 1942.

Due to the War, emergency precautions have been designed to provide against the possibilities of units of the CBC network being destroyed either by bombing or sabotage. Alternate facilities, emergency transmitters to replace land lines that may be out of commission and portable equipment are all provided and the staff of the CBC is trained and ready for 'battle-stations'.

Broadcasting CBC News.—The CBC news service is available to all radio stations to which there are land lines. Local news is secured under arrangements between each station and its local newspapers. Broadcast of news from sources other than the above is not permitted without written authorization from the Corporation. Private stations may release the CBC news service only on a sustaining, non-sponsored basis.

Newsrooms are maintained by the CBC at Halifax, Montreal (which provides news in both English and French), Winnipeg and Vancouver with a central newsroom at Toronto. The Canadian Press and British United Press both provide full news services to the CBC and reports picked up by the CBC short-wave Listening Post are often used on the news bulletins heard over CBC stations and network. In addition, these overseas reports are supplied to CP and BUP services. The news is edited and re-written in a style suitable for radio. Specialized talks and discussions by experienced commentators, expert students and international figures in the United Kingdom, the United States and Canada are heard regularly over CBC networks.

The Corporation is the point of contact between the Wartime Censorship Co-ordination Committee and radio stations and other organizations throughout Canada in disseminating important information and instructions associated with broadcasting. The Corporation also works in close co-operation with the Wartime Information Board.

The Post Office.—The number of post offices has increased from about 3,470 in 1867 to over 12,410 in 1942, with a total revenue in 1941-42 of approximately $55,477,159. The Post Office Department in the fiscal year 1941-42 issued money orders to the amount of $202,102,135 payable in Canada and $3,573,346 payable in other countries, a combined net increase over the previous year of $32,109,932. In addition, postal notes to the value of $18,360,326 were issued in 1941-42.

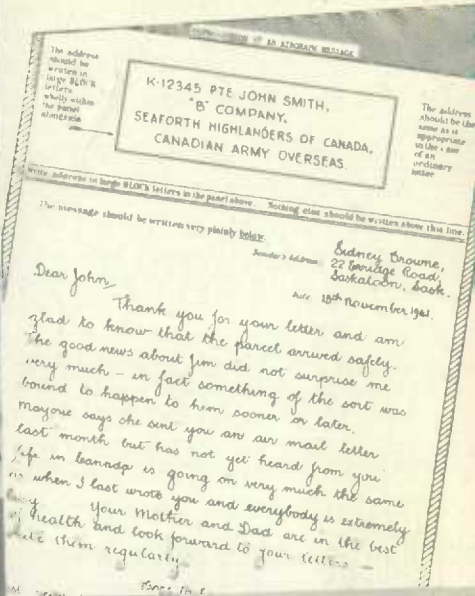
Official air-mail service was inaugurated in October, 1927. Since that time great advances have been made, both in the number of services and in the volume of mail conveyed, as shown by the following statistics:—

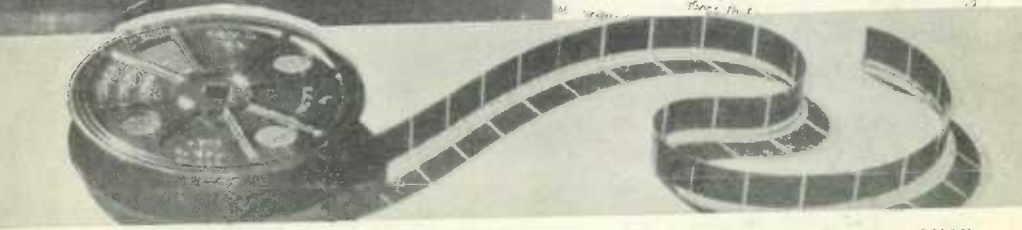
	Miles Flown No.	Mail Carried lb.		Miles Flown No.	Mail Carried lb.
1931-32	1,229,021	443,501	1938-39	3,711,948	1,822,344
1935-36	852,108	1,180,982	1939-40	5,769,257	2,351,172
1936-37	977,864	1,200,831	1940-41	8,330,121	2,842,367
1937-38	1,474,041	1,367,972	1941-42	10,026,579	3,541,625

Canada's air-mail service extends from St. John's, Newfoundland, to Victoria, B.C., from the International Boundary to the Arctic Ocean, with an extension between Toronto and New York city. Close connections have been arranged between United States and Canadian air-mail services at several strategic points across Canada, providing fast mail connections between all points on the North and South American continents.

A semi-daily fast air-mail service between Halifax, N.S., and Victoria, B.C., makes possible a letter leaving Victoria at 5.15 a.m. to reach Halifax at 6.15 a.m. the next day. Similarly, air mail leaving St. John's, Newfoundland, at 1.15 p.m., or Halifax at 5.00 p.m. is due in Victoria, B.C., at 12.40 p.m. the next day.

The combination air-mail special delivery service is becoming increasingly popular, providing as it does for delivery by special messenger of mail arriving after the departure of the letter carriers.





Since November, 1941, an airgraph service has linked Canada with the United Kingdom and the Middle East. Letters written on special forms are reduced on miniature film and forwarded by aeroplane across the sea; there they are enlarged to readable size and delivered. *Top:* Enlarging process. *Centre left:* The box (indicated by arrow) containing the microfilm on which 1,500 letters are photographed, as compared with the bulk of ordinary letters. *Centre right:* A typical airgraph message in final form. *Bottom:* The film on which messages are recorded.

Courtesy, Post Office Department

Airgraph.—The Airgraph is a new development in the speeding of transoceanic mail. Airgraph service now links Canada with the United Kingdom, North Africa and the Middle East; speeding up mail delivery and conserving valuable shipping space. Originally a one-way service, it is now operated in both directions and is open to civil correspondence, the rates being 6 cents for letters addressed to Canadian troops and 15 cents for those to civilians.

Since its inauguration in November, 1941, the load carried by the airgraph service has grown rapidly: 106,000 letters were dispatched in November, 1942.

The above illustrations indicate the economies effected by this means of communication; the small spool of film, containing 1,500 letters, weighs but 6 ounces, so that 4,000 letters weigh only a pound.

To make delivery more certain, duplicate copies are sent by alternate air routes and original messages are not destroyed until confirmation of arrival of the films.

CHAPTER XI

Labour—Employment and Unemployment—Pensions

Labour Legislation in Canada

The Dominion and Provincial Fields.—In Canada most labour laws have been enacted by the provinces as they relate to civil rights or to local works and undertakings, subjects which, with the exception of certain specified works, railways, shipping, telegraphs and other works extending beyond the boundary of a province, are, under the British North America Act, reserved to the provinces. In all provinces, except Prince Edward Island in which there is little industrial employment, there are laws for the regulation and inspection of mines, factories, shops and other workplaces and dealing with wages, hours of work, the employment of women and children and workmen's compensation. In some provinces laws have been enacted to protect the right of association, to require employers to bargain with the representatives of employees or with trade union officers and to prohibit any strike or lockout until after inquiry.

Women in Industry.—Women have proved themselves capable of carrying on even the heavier tasks of munitions production but are particularly adaptable to the mechanical operations connected with the manufacture of small arms.

Courtesy, Wartime Information

The Dominion regulates working conditions of its own employees, provides compensation for them in case of accident or certain diseases arising out of their employment and requires observance of specified wage and hour conditions in the execution of Dominion public works and of contracts for supplies. There are federal laws relating to employment on railways and in the mercantile marine and, under its power over criminal law, Parliament enacted legislation freeing trade unions from liability to prosecution as conspiracies, permitting peaceful picketing, and prohibiting employment on Sunday except under certain conditions. By virtue of an amendment to the British North America Act, Parliament enacted, in 1940, a statute providing for a national system of unemployment insurance and of employment offices (see p. 140). Previously, the Dominion and the provinces had co-operated to enable provincial systems of employment offices to be linked together for interprovincial clearance of labour and publication of information.

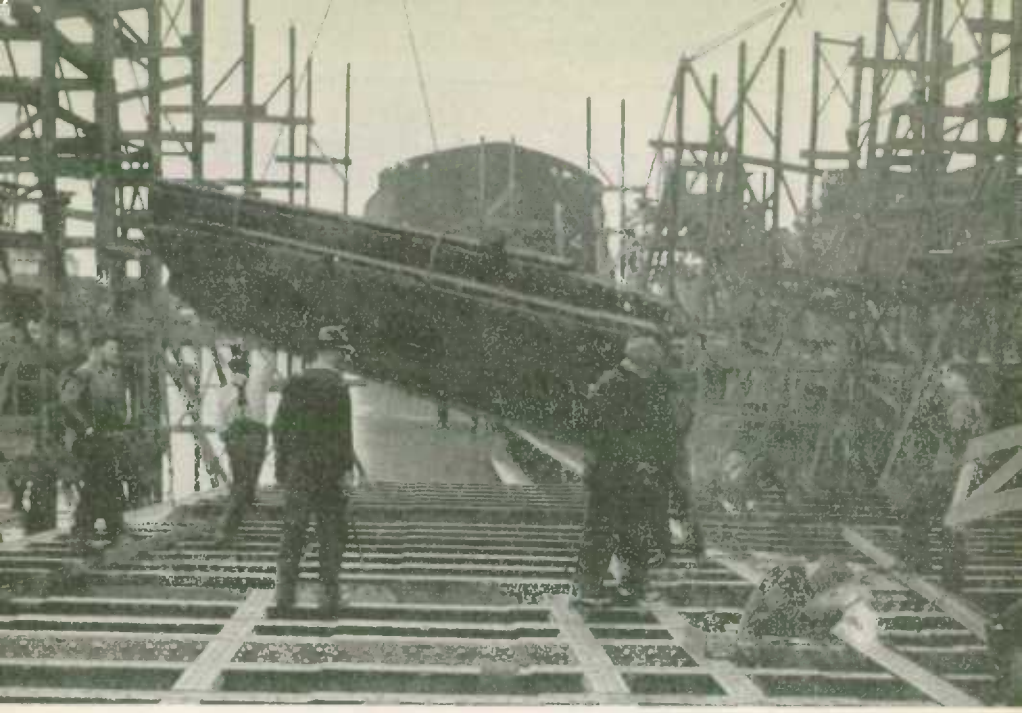
The Dominion and the provinces have also co-operated to enable the former to deal with certain classes of labour disputes under a Dominion statute, the Industrial Disputes Investigation Act. This Act prohibits a strike or lockout, pending investigation of the dispute by a tripartite board, in mining, transport, and certain public utilities within Dominion jurisdiction or in any such industries within provincial jurisdiction if legislation of the province in question has made the Act applicable. In all provinces, except Prince Edward Island, Alberta, and British Columbia, there is legislation to this effect.

In 1900 a Dominion Department of Labour was established under the Conciliation Act to aid in improving labour conditions and settling disputes through mediation and the dissemination of information. The Minister of Labour is charged with the carrying out of the Fair Wage Policy for Government contracts, the Industrial Disputes Investigation Act, Government Annuities Act, Combines Investigation Act, Vocational Training Co-ordination Act, and Unemployment Insurance Act. Information on the operation of these statutes is given in the annual reports of the Department and of the Unemployment Insurance Commission and also in the *Labour Gazette* which is issued monthly.

Departments of Labour in all provinces, except Alberta, Saskatchewan and Prince Edward Island, administer most provincial labour laws, but in the four western provinces the Workmen's Compensation Boards are independent and in New Brunswick the Board, which is under the Provincial Secretary, enforces the Factory Act. In Alberta the Department of Trade and Industry, through the Board of Industrial Relations, deals with wages and hours legislation and the Department of Public Works with factory inspection. The Saskatchewan Bureau of Labour and Public Welfare is in charge of the Minister of Municipal Affairs. In all provinces laws for the protection of miners are administered by the respective Departments of Mines.

War Regulations.—To deal with problems arising out of the War, a number of Orders in Council have been made under the War Measures Act. A declaration of principles for the conduct of labour and industry in war time was embodied in an Order in Council. The Industrial Disputes Investigation Act was extended to war industries and an Industrial Disputes Inquiry Commission appointed to deal speedily with disputes in such industries and compose them, if possible, without recourse to the appointment of a board of conciliation and investigation (see p. 134).

A comprehensive National Selective Service Program has been put into effect which is designed to secure the most effective distribution of man-power both within industry and between industry and the Armed Forces (p. 141). Skilled workers for



The growth of Canada's war-time shipbuilding program has been phenomenal. At the outbreak of war shipyards employed 3,490 workers; to-day Canada's 79 yards building naval and merchant marine vessels employ over 40,000 men and women. On Dec. 21, 1942, the hundredth 10,000-ton cargo ship was launched at Vancouver. Standardization of design has speeded up production.

Courtesy, Wartime Information

these categories are trained under a War Emergency Training Program. A comprehensive wages control policy is in effect (see below) and is supplemented by the control of salaries. Persons discharged from the Armed Forces must be reinstated in their former jobs and other steps have been taken to assist them in re-establishing themselves in civil life. Pensions and compensation are provided for Canadian seamen and salt-water fishermen who suffer disability, loss of effects, etc., as a result of enemy action.

Wages Stabilization Policy

In accordance with the Government's general anti-inflationary policy, P.C. 7440, Dec. 16, 1940, as amended, set forth a wages policy that was to be observed by boards of conciliation and investigation in their recommendations regarding wages and was recommended for all employers. With the introduction of a comprehensive price-control policy, P.C. 7440 was replaced by the Wartime Wages and Cost of Living Bonus Order (P.C. 8253, Oct. 24, 1941, as amended) by which its principles were generalized, with some modification, for all industries. Wage rates are now stabilized at the level of Nov. 15, 1941, though provision is made for the raising of rates that are unduly low. At the same time, the imposition of undue hardship on wage-earners is avoided by the payment of a cost-of-living bonus which is to be adjusted with changes in the cost-of-living index.

P.C. 8253 also provides for permanent enforcement machinery in the form of the National War Labour Board which, with the help of nine Regional War Labour Boards, is to administer the Order and the fair-wages policy. Each board consists of an independent chairman (the Dominion Minister of Labour for the National Board

and the Provincial Ministers for the Regional Boards) and an equal number of employers' and workers' representatives. The assistance of the provincial departments is secured through the Regional Boards, and provision is made in P.C. 1774 for the use of their inspection staffs.

Wages and Hours of Labour

In building and construction, wages for the skilled trades in cities are from 60 cents per hour to $1·25 or more and for labourers from 35 cents to 65 cents. On steam railways, shop mechanics are paid from 72 to 79 cents per hour and sectionmen 38 to 43 cents. On steamships, deckhands on the east coast are paid $40 to $50 per month with board and lodging; on the west coast from $50 to $75 and on the Great Lakes from $60 to $65. In the transport service, that is, on lighthouse and buoy tenders, a war risk bonus is paid amounting to 25 p.c. of the basic wage rate in designated coastal waters on both the Atlantic and Pacific seaboards. Quite distinct from the war risk bonus to certain workers in the Transport Department, there is a war risk bonus authorized by the National War Labour Board of $25 per month to workers engaged in shipping in designated coastal waters and $45 per month for those engaged in trans-oceanic shipping. Wages for truck drivers are from 40 to 65 cents per hour. In the principal coal mines, wages for miners are from $6 to $8 per day and for labourers from $3 to $5; in metal mines, rates for mechanics and miners are $5 to $6·50 and for labourers $4 to $4·50. In manufacturing, wages for skilled metal trades are from 50 cents to $1·25 per hour, for printing trades from $25 to $45 per week, for clothing factory cutters $35 to $45 per week and for newsprint paper makers $1 to $1·75 per hour. Semi-skilled male workers are paid generally 40 to 80 cents per hour and female workers 25 to 60 cents. Farm labourers generally are paid $20 to $60 per month with board and lodging.

Hours of labour in manufacturing are in general 48 to 54 per week in textile factories, 40 to 50 in clothing factories, 48 in the pulp and paper industry, 44 to 55 in paper goods, 47 to 55 in woodworking, 44 to 55 in metal manufacturing, 40 to 55 in the boot and shoe and rubber industries. The 8-hour day prevails in building trades in cities, on steam railways and in mining.

Organized Labour in Canada

Trade unions in Canada are divided into four principal groups: those affiliated with the Trades and Labour Congress; those affiliated with the Canadian Congress of Labour; the unions in the Province of Quebec which are linked with the Confederation of Catholic Workers of Canada; and the railroad brotherhoods of men in train and engine service. The railroad brotherhoods, like some of the unions affiliated with the two Congresses, are "international unions" in the sense that they have branches in both Canada and the United States and in some cases in Newfoundland, Mexico, Panama, or the Philippines. In addition to the three Federal organizations and the railroad brotherhoods, there is the Canadian Federation of Labour with member unions in different industries and the One Big Union with branches only in Manitoba.

In December, 1941, there were 461,681 trade union members reported to the Department of Labour, an increase of 96,137 over 1940. The 1941 membership exceeded that for 1919, a peak year, by 83,634. The number of branches of unions and of local unions was 3,318, a gain of 50 during the year. The international

unions showed an increase of 61,036 in their Canadian membership. The most outstanding increase in members was in the metal working industries where steel workers, automobile workers and machinists made up over 50 p.c. of the membership.

The Trades and Labour Congress reported in 1941 a membership of 144,592, the Canadian Congress of Labour Unions, 125,000 members, and the Confederation of Catholic Workers, 46,000.

Industrial Disputes

For the first ten months (January to October) of 1942 the preliminary figures showed a total of 312 strikes and lockouts, involving 93,145 workers and causing a time loss of 346,178 man-working days. During the twelve months of 1941 there were 231 strikes and lockouts, involving 87,091 workers, with a time loss of 433,914 man-working days. The minimum time loss since the inception of the record in 1901 was in 1930, when 91,997 man-working days were lost in 67 disputes, involving 13,768 workers. The maximum loss occurred in 1919, when 336 disputes involved 148,915 workers and caused a time loss of 3,400,942 man-working days.

Industrial Disputes Investigation Act.—Shortly after the outbreak of hostilities in 1939, the scope of the Industrial Disputes Investigation Act was extended to cover disputes between employers and employees engaged in war work. This was defined as including the construction, execution, production, repairing, manufacture, transportation, storage or delivery of munitions of war or supplies, and also the construction, remodelling, repair or demolition of defence projects.

A subsequent statement of the Government's war-time labour policy outlined certain principles for the avoidance of industrial unrest during the War. Coupled with this statement was the declaration that there should be no interruption in productive or distributive operations on account of strikes or lockouts. It was pointed out that where any difference arose that could not be settled by negotiation between the parties, assistance in effecting a settlement should be sought from the Government conciliation services, and failing settlement of the difference in this manner, the difficulties should be dealt with in accordance with the provisions of the Industrial Disputes Investigation Act, as extended to apply specifically to all war work.

In June, 1941, an Act was passed to amend the Industrial Disputes Investigation Act. By the amending Act, any person is prevented from serving on a Board of

Farmerettes Picking Fruit in the Niagara District.—These smiling farmerettes personify the spirit of hundreds of girls who serve on farms each summer to help relieve the situation caused by an acute shortage of manpower.

Courtesy, Wartime Information

Conciliation and Investigation if he is, or within six months has been, a counsel or paid agent of the parties to the dispute, the whole purpose being to ensure a greater measure of impartiality in Board procedure.

The extension of the scope of the Industrial Disputes Investigation Act to war work has resulted in a marked expansion of proceedings under the Statute. In the pre-war period 1929-38 the Department of Labour received 215 applications for the establishment of Boards of Conciliation and 92 boards were established. From Sept. 1, 1939 to Oct. 31, 1942, inclusive, 313 applications were received and 116 boards established. During this latter period, as a result of board procedure, cessation of work was averted or ended in all but 14 cases. From the enactment of the Statute in 1907 to Oct. 31, 1942, a total of 1,257 applications had been received, 698 boards established and strikes or lockouts averted or ended in all but 53 cases.

In June, 1941, provision was made by Order in Council that any dispute coming within the scope of the Industrial Disputes Investigation Act might be referred for preliminary investigation to an Industrial Disputes Inquiry Commission consisting of one or more members appointed by the Minister of Labour. If the Commission's preliminary investigation should not result in a satisfactory adjustment of the dispute, it was provided that the Commission advise the Minister on the matters at issue and whether the circumstances warranted the establishment of a Board of Conciliation and Investigation. This procedure was adopted as a result of the aforementioned marked increase in the number of applications for the establishment of boards, many of such applications having reference to disputes of a nature *prima facie* not to warrant recourse to board procedure.

Another Order in Council requires that employees, contemplating strike action following receipt of the recommendations of a Board of Conciliation and Investigation, notify the Minister of Labour, who may direct that a strike vote under the supervision of the Department of Labour be taken among the employees concerned.

As an integral part of the economic control in the national war effort, a war-time wages policy has been prescribed for all industries. This policy is administered by a National War Labour Board and nine Regional War Labour Boards (see p. 132). Within the limits of a wage range established prior to Nov. 15, 1941, subject to specified qualifications, employers may adjust wage rates without the direction of a War Labour Board.

All applications for the establishment of Boards of Conciliation and Investigation in which wages, wage payments, or other requests involving money payments such as overtime, holidays with pay, etc., were the cause of the dispute were removed from the ambit of the Industrial Disputes Investigation Act and became the responsibility of the National and Regional War Labour Boards for adjustment. (For further details concerning Canada's Wartime Wages Stabilization Policy, see p. 132.)

Employment and Unemployment

The Effect of the War on Employment in the Dominion

The effect of war-time conditions on the general industrial situation in Canada, as in other countries, has been far-reaching. From the outbreak of hostilities early in September of 1939, there has been extraordinary expansion, the rare interruptions to the generally upward movement having been due almost entirely to seasonal factors, whose influence in Canada is particularly marked.

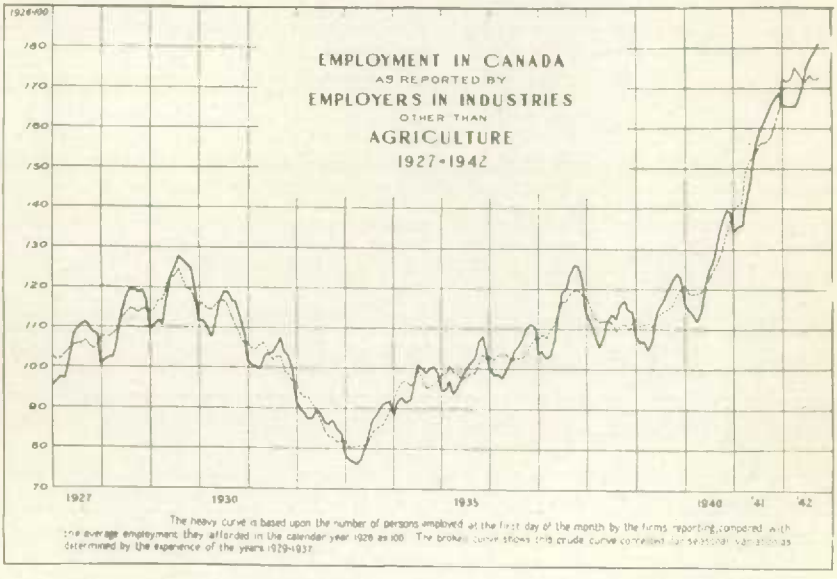
At Sept. 1, 1939, the general index of employment stood at 119·6, from where it rose to 181·3 at Oct. 1, 1942, or by 51·6 p.c. in the 37 months. This gain in the index

represents the addition of approximately 617,000 persons to the staffs of the establishments furnishing monthly reports on employment and payrolls to the Dominion Bureau of Statistics. The smaller firms may also have increased their personnel considerably, although it seems likely that recent events have, on the whole, reacted less favourably upon the smaller businesses. The recruitment of a labour force of this size, together with the enlistment of some 600,000 men and women in the Armed Forces in the space of three years, has brought about many important changes in the industrial and occupational distributions of the Canadian population.

Prominent among these changes has been an unprecedented growth in employment in manufacturing, in which the index has risen by 89 p.c. from the outbreak of war to Oct. 1, 1942. The magnitude of this increase is emphasized by comparison with that of not quite 14 p.c. in the non-manufacturing classes. Of the estimated 617,000 persons added to the staffs of the co-operating employers from Sept. 1, 1939, to Oct. 1, 1942, about 536,600 have been taken on in manufacturing establishments.

It is not possible to give a clear picture of the increase in the various divisions of manufacturing directly due to the War because of the different interpretations that can be placed on the term "war work". Moreover, many firms are carrying on war work under the sub-contracting plan, using their personnel interchangeably on normal and war production; others have staffs devoted to each class of work, but for security reasons do not make separate reports; still other companies have formed entirely new organizations to provide munitions of war.

The durable-goods group of industries is now very largely engaged on the manufacture of products required directly in the conduct of the War, such as aircraft, ships, firearms, motor-vehicles, tanks, etc.; the index in this group has risen by over 159 p.c. from the outbreak of hostilities. The gains in personnel were especially large in iron and steel, electrical-apparatus plants and non-ferrous metals. The expansion has taken place in the face of progressive curtailment of production in many lines of consumer durable goods; it may therefore be ascribed very largely to munitions work.



The heavy curve is based upon the number of persons employed at the first day of the month by the firms reporting, compared with the average employment they afforded in the calendar year 1926 as 100. The broken curve shows the crude curve corrected for seasonal variation as determined by the experience of the years 1929-1937.

Turning to the non-durable goods group, the index of employment has risen by 47 p.c. between Sept. 1, 1939, and Oct. 1, 1942. Part of this increase is due to seasonal causes; that at Sept. 1, 1942, had amounted to 42·5 p.c. Especially marked activity has been shown in the chemical industries, most of which results directly from the manufacture of products required in the conduct of the War. Food, clothing, pulp and paper and leather factories, have also considerably increased their personnel during the period of the War, although it must be noted that employment in these industries has tended to slacken in recent months as a result of the labour stringency. Nevertheless, these industries have made and will continue to make a very important contribution to the industrial war effort, both in the field of their normal production, and also in the new types of work undertaken under the sub-contracting system used to expedite production of commodities required in the conduct of the War.

While employment in the non-manufacturing classes generally is greater than at the outbreak of war, there is evidence that the growth in production more directly connected with the war effort is taking place to an increasing extent at the expense of other industries. Logging, communications, transportation, services and trade reported a greater volume of employment at Oct. 1, 1942, than at Sept. 1, 1939, while mining and construction as a whole were quieter, largely due to shortages of labour and materials. Employment in some branches of these industries will, in all probability, decrease as the available supply of workers diminishes.

Index Numbers of Employment as Reported by Employers, 1921–42

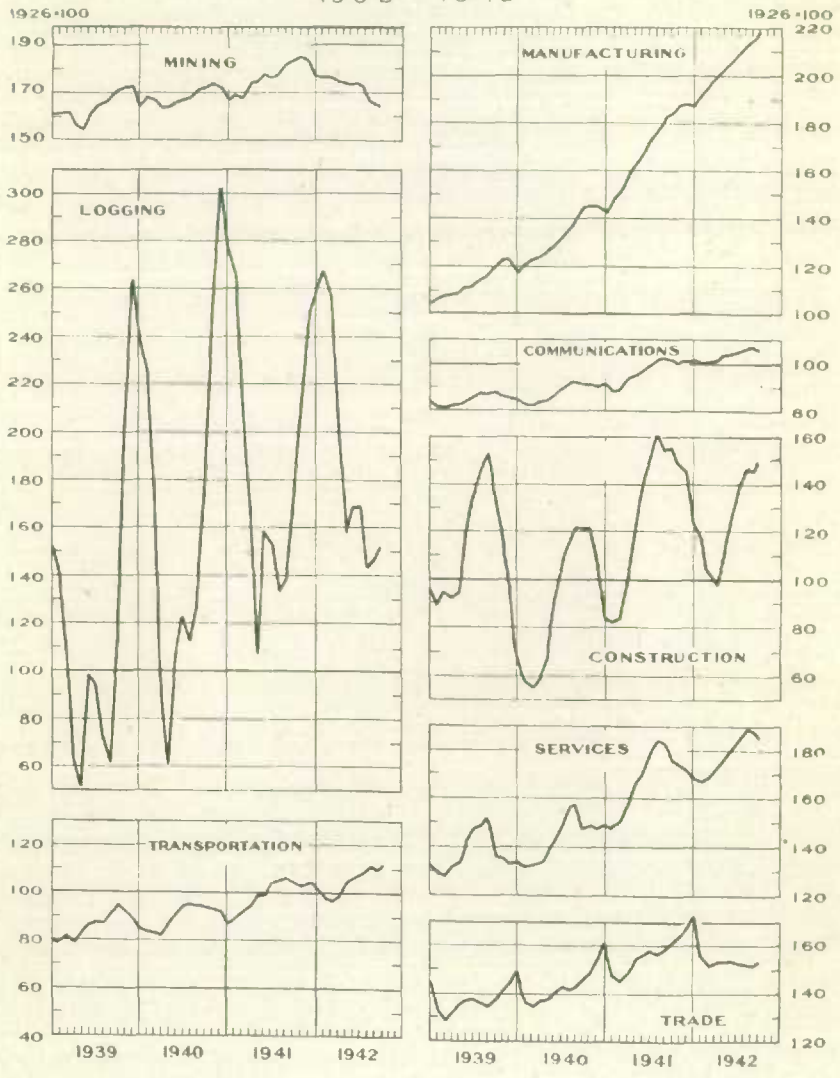
Year	Index Number	Year	Index Number	Year	Index Number
1921	88·8	1929	119·0	1937	114·1
1922	89·0	1930	113·4	1938	111·8
1923	95·8	1931	102·5	1939	113·9
1924	93·4	1932	87·5	1940	124·2
1925	93·6	1933	83·4	1941	152·3
1926	99·6	1934	96·0	1942[1]	173·7
1927	104·6	1935	99·4		
1928	111·6	1936	103·7		

[1] Subject to revision.

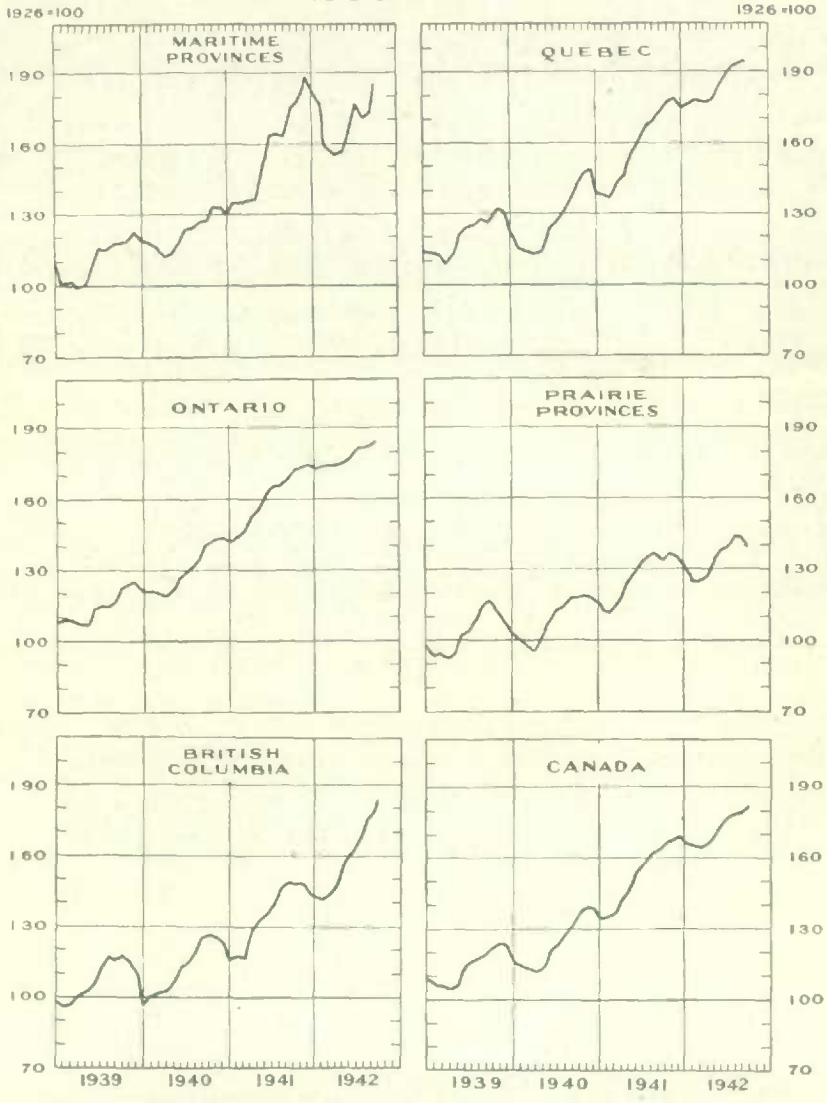
Employment 1941 and 1942.—The buoyant movement characterizing the general employment situation since the outbreak of hostilities continued in evidence in 1942; however, as the organization of the industrial war effort reached a more advanced state, and the available supply of labour diminished, the rate of acceleration has slackened to some extent. Despite this tendency, successive new all-time peaks of employment were indicated each month, commencing with June 1, 1942. From Jan. 1 to Oct. 1, 1942 (the period for which data were available at the time of writing), the general index (1926=100) averaged 171·5; this was 15 p.c. higher than the figure for the first ten months of 1941. The persons in recorded employment in the main industrial groups numbered 1,815,672 at Oct. 1, when their earnings for services rendered in the week preceding were reported as $53,549,615; the per capita weekly average was $29·49. These figures represent substantial increases as compared with the corresponding data for Oct. 1, 1941, employment, aggregate payrolls and per capita average earnings having risen by 9·3 p.c., 21·7 p.c., and 11·8 p.c., respectively. The disparity between the last two figures is a result of the progressive dilution of labour; that between the indexes of employment and aggregate payrolls is partly due to the growing concentration of employment in the heavy industries, where rates of pay

are above average and, in addition, there is in many cases a considerable amount of overtime work, while the payment of a cost-of-living bonus to many workers has also contributed materially to the proportionately greater gain in the reported payrolls.

INDEX NUMBERS OF EMPLOYMENT BY INDUSTRIES 1939 - 1942



INDEX NUMBERS OF EMPLOYMENT BY ECONOMIC AREAS 1939 – 1942



In manufacturing the index number of employment averaged 203·7 for the first ten months of 1942; this was 23·9 p.c. higher than for the same period of 1941, previously the maximum in this record. The payrolls also showed important gains, substantially exceeding those for employment; thus from Oct. 1, 1941, to Oct. 1, 1942, the latter rose by 18 p.c., while the index of payrolls increased by 32·4 p.c.

Employment in the production of durable goods, especially in the iron and steel group (notably in shipbuilding, aircraft and firearm manufacturing) and in the non-ferrous metal, electrical apparatus and lumber industries, has shown particularly impressive advances in recent months, the index at Oct. 1, 1942, being higher by 30·6 p.c. than at the beginning of October in 1941. In the same period, the reported payrolls, despite continued dilution of labour, have risen by 47·1 p.c.

The non-durable goods industries on the whole were brisk during 1942, despite a tendency in some branches to slow down in the latter months when the shortage of labour became more acute. The greatest expansion among the light manufacturing industries was reported in chemical and miscellaneous manufactured goods, both of which are largely engaged on war work. Beverage and tobacco factories were also extremely busy. An unusually high level of activity was indicated generally in the remaining industries during 1942; nevertheless, in many cases employment therein was quieter than in the later months of 1941. Among the groups affected in this manner may be mentioned the textile, food, pulp and paper and leather divisions.

The trends in the non-manufacturing industries were divergent, activity in some cases being very great, while in others the prevailing labour stringency had an adverse effect upon the situation. Recorded employment in the transportation, communications and service groups reached unusually high levels. In logging, mining, construction and trade, however, the index numbers during the later months of 1942 were lower than in the same period of 1941, although in general they were higher than in immediately preceding years.

Unemployment Insurance and Selective Service

Unemployment Insurance.—The Unemployment Insurance Act, which became law on Aug. 7, 1940, authorized an Unemployment Insurance Commission to set up and administer a co-ordinated program of unemployment insurance and employment service. The Commission—consisting of a Chief Commissioner, one Commissioner appointed after consulting employees and one after consulting employers—was appointed on Sept. 24, 1940.

The Head Office of the Commission is at Ottawa. For the purpose of administration, Canada is divided into five areas known as the Pacific, Prairie, Ontario, Quebec and Maritime regions. Regional offices located at Vancouver, Winnipeg, Toronto, Montreal and Moncton act as clearing houses for local offices, which are the units through which the employment service and unemployment insurance are operated. Two hundred of these local offices have been opened in centres across Canada. The employment service of the Commission now functions as the field organization of National Selective Service.

Persons registered by the Commission up to Nov. 1, 1942, included 161,221 employers and 3,317,287 employees. Of the latter, 2,647,925 were insurable and 669,362 were uninsured.

Unemployment insurance contributions became payable in Canada commencing July 1, 1941. Insured workers and their employers make contributions according to a graded scale, but in the country as a whole, they contribute approximately equal amounts. The Dominion Government adds one-fifth of the total amount contributed by employees and employers to the Unemployment Insurance Fund and in addition pays the administrative costs of the scheme.

In the fifteen months, from July 1, 1941, to Sept. 30, 1942, $77,662,774 was deposited in the Unemployment Insurance Fund, which includes employee, employer

and Government contributions and interest. Employer and employee contributions to the fund were $63,998,633. In the same period, the Dominion Government paid $12,799,726 to the fund.

The Unemployment Insurance Fund is deposited with the Bank of Canada and reserves are invested in Dominion of Canada bonds on the authorization of an Investment Committee, composed of the Governor of the Bank of Canada, the Deputy Minister of Labour and the Deputy Minister of Finance. The total interest derived from investments in the period up to Sept. 30, 1942, amounted to $864,415.

The first date on which claimants could qualify for benefit was Jan. 27, 1942. From Jan. 27 to Sept. 30, 1942, the amount paid in insurance benefit was $262,174. In this period there were 19,090 claims received at Insurance Offices for adjudication. The disposal of these claims was as follows: 14,135 allowed, 3,809 not allowed, with 1,146 pending. In the same period 310 references and 20 appeals were made to Courts of Referees. In addition there were 3 references by Insurance Offices to Courts of Referees. Of the 333 references and appeals, 243 were heard, 59 were pending on Sept. 30, and 31 were withdrawn. The Courts of Referees disallowed 202 claims and allowed 41.

The Unemployment Insurance Advisory Committee, established under the Act, submits an annual report on the condition of the fund to the Governor in Council. The Committee also gives assistance and advice on questions relating to the operation and scope of the Act referred to it by the Commission.

The National Employment Committee, representing labour, industry, veterans, women's organizations and other interested groups, assists the Commission in an advisory capacity in carrying out the purposes of the employment service. Five Regional Employment Committees and a number of Local Employment Committees have been set up to assist in this work.

National Selective Service.—Organization and allocation of Canada's man-power in such a way that it will contribute most effectively to the war effort is of paramount importance. The requirements of the Armed Forces and of war industry must be met and the necessary level of civilian production and services must be maintained.

Information concerning available man-power is obtained from the National Registration, 1940, of persons 16 years of age or over; from records of the Unemployment Insurance Commission, including a record of unemployed persons; and from records resulting from the registration of women by age groups. The records of National Registration serve for the selection of men for compulsory military training, but for other purposes, correlation of all the records mentioned above is necessary to overcome variations occasioned by the lapse of time.

The Minister of Labour is Chairman of the Manpower Committee of the Cabinet. The Director of National Selective Service reports to the Minister of Labour. It is the duty of the Director to co-ordinate all Government activities relating to labour supply. He is advised by a National Selective Service Advisory Board composed of the National War Labour Board and the Interdepartmental Committee on Labour Co-ordination. This body formulates recommendations on man-power policy to the Cabinet Committee for approval and clearance on necessary action. The Minister of Labour, through the Director of National Selective Service, is now responsible for calling up men for the Armed Forces as well as all other man-power functions and for all decisions on deferment of military service. Local boards deal with deferment and other questions related to the Armed Forces while other local boards or

committees assist in the matter of civilian employment. Employment Offices and records of the Unemployment Insurance Commission are to be directed by the Director of National Selective Service for the duration of the War.

Measures of control of the movement of labour embodied in the National Selective Service Regulations, Aug. 26, 1942, are now in operation. No employee, except he be excluded by definition, may quit his work without giving his employer seven days' notice in writing. No employer may lay off or discharge a worker without seven days' notice in writing, suspension for misconduct being permissible and appeal machinery being provided. Interview or engagement of a worker is restricted to workers having a permit to seek employment, such permits being issued by National Selective Service officers. A National Selective Service officer has the power to order any person to report for interview, to order any person unemployed seven days to take any suitable work and any partially employed worker to take any suitable full-time employment. No person ordered by a National Selective Service officer to take a job may quit that job without permission of the officer. Financial assistance has been made available to facilitate the mobility of workers. Workers requested by Selective Service officers to transfer from less to more essential work have the same protection as members of the Armed Forces in claiming reinstatement in former employment. A worker, his union, his present or prospective employer may appeal to a duly constituted Board of Appeal; no person may advertise or offer employment by any means except by arrangement with a National Selective Service officer. No person employed in agriculture may accept, without a permit, employment outside agriculture other than military training or service and non-agricultural employment for not more than thirty days when such employment would not interfere with farm production. The Director of National Selective Service may establish and revise, as required, a labour priority schedule indicating the priorities according to which the demands of employers for labour may be filled. Technical personnel is mobilized and distributed in the Armed Forces and in essential industry with a view to its most effective use. Courses in personnel management sponsored and aided by the Department of Labour are being given in several universities and similar courses in foreman training are probable.

Having reached the stage where the curtailment of industries of relatively low essentiality has become necessary, the Wartime Prices and Trade Board has been assigned the responsibility of reviewing industries with a view to releasing more workers from less essential industries for their transfer to more essential employment.

Employment and Selective Service Offices.—In the first nine months of 1942, employment and selective service offices received 819,042 applications for employment, were notified of 666,812 vacancies and effected 383,219 placements. During the same period of 1941, offices of the Employment Service of Canada reported 636,221 applications for work, 413,986 vacancies and 381,224 placements.

Although placements during the first nine months of 1942 were only fractionally higher than during the corresponding period of 1941, there was a considerable variation when comparison is made by industrial groups. The most important gain was in manufacturing, where placements showed an increase of nearly 76,000, reflecting the continuous expansion of war industries; there was also a fairly substantial advance in trade. An important decrease was recorded in services, in which placements declined about 50,000; fairly large reductions were also reported in construction, agriculture and logging.

Youth Training and War Emergency Training

The Youth Training Act, 1939, under which the Youth Training Program and the War Emergency Training Program were carried on, expired Mar. 31, 1942. Continuing legislation, entitled the Vocational Training Co-ordination Act, 1942, was enacted during the 1941-42 session of Parliament. This legislation, broader in scope than the Youth Training Act, 1939, provides for the continuation of projects previously carried on under that Act, training to fit persons for employment contributing to the war effort either in industry or in the Armed Forces and rehabilitation training for discharged members of the Armed Forces.

Agreements have been entered into with the provinces under the authority of the Vocational Training Co-ordination Act for a three-year period ending Mar. 31, 1945, for the continuation of the Youth Training Program and of the War Emergency Training Program. At present, youth-training projects are restricted to those that are of assistance in the war effort. Almost one-third of the money allotted for youth training projects during the fiscal year 1942-43 is being used to assist university students in medicine, dentistry, engineering and science.

Training under the War Emergency Training Program is, chiefly, of three types: training of workers for war industry; training of tradesmen for the Armed Forces; and rehabilitation training for discharged members of the Armed Forces. Training is given at approximately 125 centres.

Men and women over sixteen years of age are eligible for admission to full-time pre-employment industrial classes, with the restriction that men within the age group liable for compulsory military training are not admitted unless they have been rejected for such military service.

From Jan. 1 to Oct. 31, 1942, there were 21,690 men and 14,876 women enrolled in full-time pre-employment industrial classes. During the same period, 15,009 men and 11,203 women were placed in employment. Subsistence allowances are paid during training.

As the source of supply of trainees for full-time pre-employment classes has diminished, increasing attention has been given to expanding training of persons in industry by means of part-time classes and plant schools. Part-time training, carried

A Radio Mechanics' Pre-Enlistment Class, Royal Canadian Air Force.

Courtesy, Wartime Information

on chiefly in the evening, in classrooms rather than in the shops and, for the most part, technical in character, facilitates the promotion and upgrading of workers. Classes are open to persons already employed in war industry and to persons presently employed in non-essential industries who wish to obtain instruction that will assist them in transferring to essential war industry. From Jan. 1 to Oct. 31, 1942, a total of 13,506 persons were enrolled in these part-time classes.

Subsistence allowances to trainees and salaries of instructors in approved plant schools are paid by the Dominion Government and technical advice and assistance is given to industry in establishing these schools. At Oct. 31, 1942, there were over fifty full-time plant schools being carried on by industry in co-operation with the War Emergency Training Program.

Job-instructor training, designed to teach foremen and supervisors the best methods of showing a worker how to do a job, is a further measure of assistance for war industries provided by the War Emergency Training Program. A second phase of the Supervision Training Program is now being developed to deal with the following topics: how to start the new worker; how to prevent accidents; how to correct the workers; how to prevent grievances and how to handle grievances.

The War Emergency Training Program continues to provide training for enlisted men of the Armed Forces. From Jan. 1 to Oct. 31, 1942, a total of 34,707 enlisted men were enrolled in war emergency training classes. Of these, 2,320 were in the Navy, 12,540 in the Army and 19,847 in the Air Force.

Vocational training is also provided by the War Emergency Training Program for discharged members of the Armed Forces, where such training is approved, by the Department of Pensions and National Health and is designed for their rehabilitation and gainful employment. From Jan. 1 to Oct. 31, 1942, a total of 700 discharged persons were enrolled in rehabilitation classes.

Leather Processing.—Removing surplus hair after the hides have passed through the unhairing machines.

Courtesy, Canadian Industries Limited

Unemployment in Trade Unions

Monthly statistics are tabulated in the Department of Labour from reports furnished by trade unions showing the unemployment existing among their members. In the first eight months of 1942, 2,190 organizations reported an average membership of 348,544, of whom 10,187 were, on an average, unemployed; this was an average percentage of 2·9 compared with 5·0, 8·8 and 13·4 in the first eight months of 1941, 1940 and 1939, respectively. The percentage of unemployment decreased in each month of 1942 from the corresponding month of 1941 and on Aug. 31 had reached 0·9, the lowest point in trade-union records for any one month since these figures were placed on a

monthly basis in January, 1919. The highest figure recorded was 25·5 p.c. for December, 1932, and for January, 1933, and the lowest was 0·4 at the end of the second quarter in June, 1918. There was 2 p.c. of unemployment in December, 1916, and 7·9 p.c. in December, 1915, when the record was begun.

Old Age Pensions and Pensions for Blind Persons

The Old Age Pensions Act, 1927.—The Act provides for a Dominion-Provincial system of non-contributory old age pensions in such provinces as have enacted and given effect to special legislation for this purpose. The provinces are charged with the payment of pensions, the Dominion reimbursing each province, quarterly, to the extent of 75 p.c. of the net cost of its payments on account of old age pensions. All the provinces are now operating under such agreements. Old age pensions are also payable in the Northwest Territories. Authority was given in 1927 to the Gold Commissioner of the Yukon to enter into an agreement with the Dominion Government for the purpose of obtaining the benefit of the Old Age Pensions Act, but no scheme has as yet been formulated.

Pensions for Blind Persons.—By an amendment to the Old Age Pensions Act, assented to Mar. 31, 1937, provision is made for the payment of pensions, under certain conditions, to blind persons who have attained the age of forty years. The maximum pension payable to blind persons is $240 a year which is subject to reduction by the amount of the pensioner's income in excess of $200 a year in the case of an applicant who is unmarried or is a widower or a widow without a child or children, and by the amount of income in excess of $400 a year in the case of an applicant who is married or a widower or widow with a child or children. The Act provides for a reduced pension to a blind person who marries another blind person subsequent to the date on which the Act came into force.

Summary of Old Age Pensions and Pensions for the Blind, 1928–42

NOTE.—The effective dates of commencement of Old Age Pensions and Pensions for Blind Persons in the various provinces were, respectively, as follows: P.E.I.—July 1, 1933, Dec. 1, 1937; N.S.—Mar. 1, 1934, Oct. 1, 1937; N.B.—July 1, 1936, Sept. 1, 1937; Que.—Aug. 1, 1936, Aug. 1, 1937; Ont.—Nov. 1, 1929, Sept. 1, 1937; Man.—Sept. 1, 1928, Sept. 1, 1937; Sask.—May 1, 1928, Nov. 15, 1937; Alta.—Aug. 1, 1929, Mar. 7, 1938; B.C.—Sept. 1, 1927, Dec. 1, 1937; N.W.T.—Jan. 25, 1929, Mar. 30, 1938.

Year ended Mar. 31—	Old Age Pensions		Pensions for the Blind	
	Pensioners	Dominion Government Contribution[1]	Pensioners	Dominion Government Contribution[1]
	No.	$	No.	$
1928	2,712	131,452	–	–
1929	10,588	832,687	–	–
1930	42,553	1,537,174	–	–
1931	57,930	5,658,143	–	–
1932	67,006	10,032,410	–	–
1933	71,705	11,512,543	–	–
1934	86,873	12,313,595	–	–
1935	101,051	14,942,459	–	–
1936	108,415	16,764,484	–	–
1937	146,524	21,149,352	–	–
1938	175,673	28,524,587	1,946[2]	128,418[2]
1939	181,514	28,283,284	4,512	760,354
1940	186,035	29,080,631	5,404	895,923
1941	185,946	28,901,933	5,913	1,009,767
1942	185,922	28,530,908	6,243	1,080,889
Totals, Government Contribution from Inception of Act	–	**238,195,640**	–	**3,875,351**

[1] Seventy-five p.c. of net cost of payments. [2] First year for complete statistics, see headnote.

Pensions for blind persons are administered by the provincial authorities under agreements made by the Lieutenant-Governors of the provinces with the Governor in Council. The Dominion Government assumes responsibility for 75 p.c. of the net sum paid out by the provinces for pensions to blind persons.

Old Age Pensions and Pensions for the Blind, by Provinces, as at Mar. 31, 1942

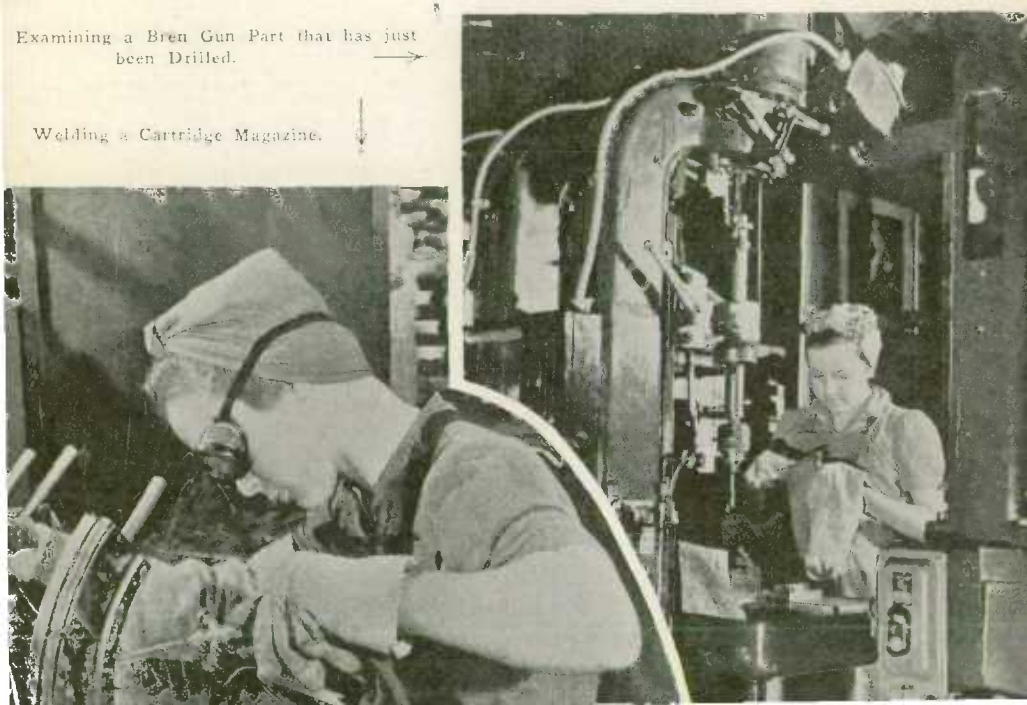
Province or Territory	Old Age Pensions		Pensions for the Blind	
	Pensioners	Average Monthly Pension	Pensioners	Average Monthly Pension
	No.	$	No.	$
Prince Edward Island	1,952	11·32	115	13·58
Nova Scotia	14,285	15·06	620	19·21
New Brunswick	11,779	14·89	740	19·66
Quebec	47,338	16·20	2,079	19·53
Ontario	59,232	18·66	1,506	19·68
Manitoba	12,701	18·70	327	19·67
Saskatchewan	13,211	17·17	314	19·88
Alberta	10,952	18·63	215	19·69
British Columbia	14,464	19·02	327	19·30
Northwest Territories	8	20·00	–	–
Totals	**185,922**	–	**6,243**	–

The Women of Canada are playing an Important Part in keeping the Dominion ahead of a Shortage of Labour. Canadian Girls have taken on many Jobs usually Reserved Exclusively for Men.

Courtesy, Wartime Information

Examining a Bren Gun Part that has just been Drilled. →

Welding a Cartridge Magazine. ↓



CHAPTER XII

Construction

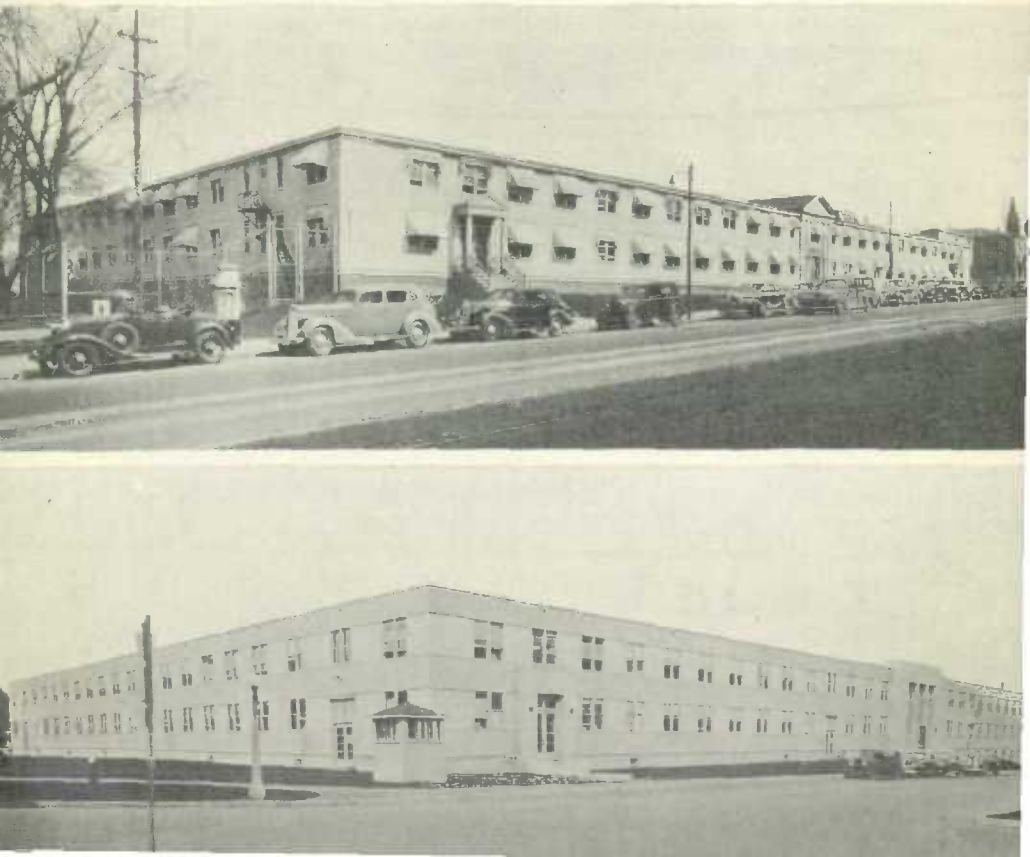
Government Assistance to and Control of Construction in War Time

Peace-time measures of the Dominion Government designed to improve housing conditions and to stimulate the building industry during the depression years preceding the War have been fitted into the requirements of war time where possible. Where they have served their purpose or where they represented a drain on the financial, material or labour resources of the country they have been discontinued.

The National Housing Act, 1938.—The most important of these measures is the National Housing Act, which succeeded the Dominion Housing Act, 1935. The purposes of the legislation and the conditions under which loans can be made have been dealt with in previous editions of the Handbook, notably at pp. 113 and 114 of *Canada 1942*.

Typical Temporary War-Time Office Buildings Constructed in Ottawa.—The increase in the personnel of Government Departments resulting from war activities has necessitated the erection of a number of these buildings to provide necessary accommodation. They are built to a standard pattern, of about two stories high, without elevator service and are of frame construction.

Courtesy, Department of Public Works



To Aug. 31, 1942, loans made under the Dominion Housing Act and Part I of the National Housing Act, and actually proceeded with, amounted to $77,223,268. Loans numbered 18,666 providing a total of 23,270 family units.

In the 1942-43 estimates a further $1,000,000 was appropriated to assist in the construction of new low-cost houses under the National Housing Act. Houses built under this appropriation must be located in areas where a shortage of permanent housing exists, upon sites having the essential services already installed. So far as possible these houses must be constructed of materials that are not essential to the war effort. Loans from this new appropriation are limited to $3,200.

The Home Extension Plan, 1942.—To further alleviate the housing shortage, provision was made in the 1942-43 Estimates for the Dominion Government to guarantee, upon an arrangement similar to the Home Improvement Loans Guarantee Act, loans made by the chartered banks for the purpose of financing the creation of new housing units in existing dwellings. These loans, which are limited to an aggregate of $2,000,000 with a maximum liability on the part of the Government of $300,000, may be made only in areas designated by the Minister of Finance as those in which a housing shortage exists or impends. These loans may be made to an owner of the property or a purchaser under an agreement of sale that has been in existence for one year before the loan is granted. Approval of the proposed alterations must be obtained from the Minister.

Government Control of Civil Construction Since the Outbreak of War.—In May, 1941, authority to control new construction, repairs to buildings, expansion of existing facilities and replacement or new installation of equipment was given to the Priorities Officer, and exercised through a Construction Control Division set up in the Priorities Branch of the Department of Munitions and Supply. In August, 1941, a Controller of Construction was appointed and the powers of the Priorities Officer in this field were conferred upon him.

A policy of rigid curtailment has been followed in order that construction for war purposes might have precedence. The granting of a licence does not confer on the licensee any priority rights to the delivery of equipment, materials or supplies to complete a project.

Construction for war purposes is divided into the following groups:—

(1) Building of defence projects for Air: (*a*) Aerodromes and training schools under the British Commonwealth Air Training Plan; (*b*) Development of Canada's Home War Establishment for Air; (*c*) Royal Air Force schools in Canada.
(2) Building of Army defence projects.
(3) Construction of Naval projects, including harbour installations.
(4) Construction of new industrial plants and plant extensions involving Government capital assistance.
(5) Provision of necessary housing incidental to industrial expansion for war purposes.

Most contracts under groups (1) to (3) and some contracts under (4) are awarded by the Construction Branch of the Department of Munitions and Supply. For the calendar year 1941 the value of these contracts, 1,208 in number, amounted to $97,538,743, as compared with 756 contracts aggregating $85,154,764 in 1940.

Contracts under (5) are let by Wartime Housing Limited, a Government-owned company established for this purpose.

Supervision of strictly defence projects (1), (2) and (3) is under the Department of National Defence, although the Department of Transport awards contracts for and supervises the building of most of the paved runways for air fields.

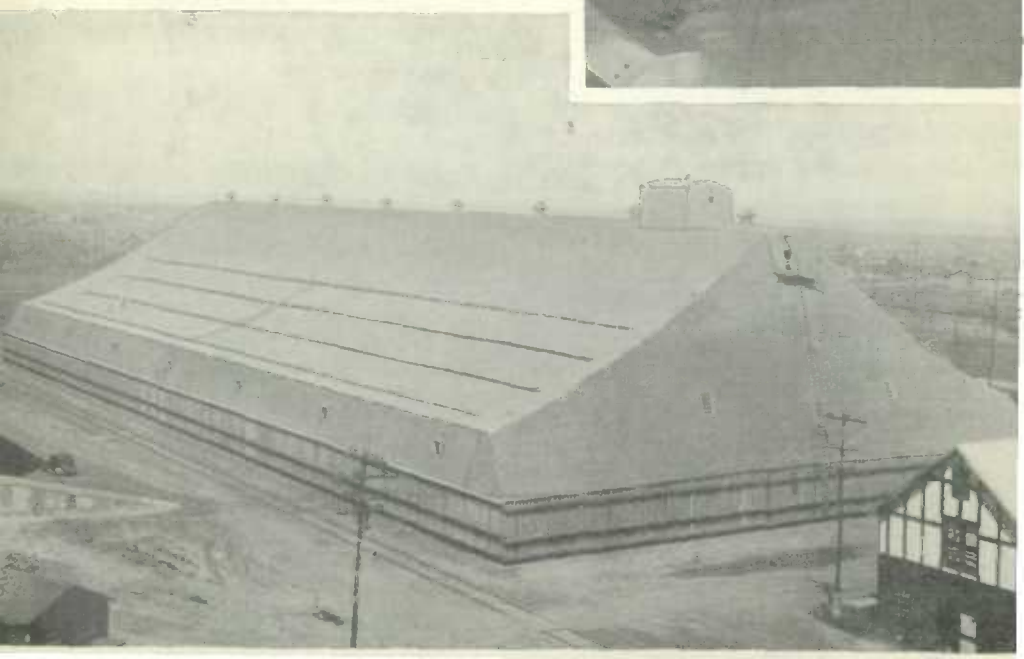
Construction relating to that portion of capital assistance extended to industry for the erection of chemical and explosives plants has been carried on under the supervision of the Allied War Supplies Corporation, a Government-owned company.

Wartime Housing Limited, established under the Department of Munitions and Supply, provides the necessary housing for employees of war plants, many of which have been located in sparsely settled localities requiring new housing facilities. In other municipalities war expansion has intensified the need for additional housing.

Government expenditures on construction amounted to $171,200,000 for the calendar year 1941 divided as follows: Armed Services, $123,500,000; that part of capital assistance to private enterprise earmarked for construction, $37,000,000; and Wartime Housing Limited, $10,700,000. Continued expansion of war-time construction projects took place during 1942.

A Low-Cost Temporary Building at Fort William, Ont., for Storing Canada's Surplus Grain.—Maximum economy of construction is a prerequisite for structures of this type, achieved in this case by using wire rope to support a sheet-metal roof laid on timber purlins. It has a capacity of 2,000,000 bu. of grain. *Inset:* A view of the interior showing timber thrust-bracing of inner walls.

Courtesy, Paterson Steamships Limited



General Statistics of Construction

Annual Census of the Construction Industries.—A census of construction was first made by the Dominion Bureau of Statistics for 1934 but the basis of compilation was not standardized until 1935, so that, with the compilation of the 1936 figures, data are now available on a comparative basis for the years shown in the table below. It should be pointed out that no relationship exists between these figures and those of values of contracts awarded as shown on p. 152. In the latter case all values are included since awards are made irrespective of whether the contract is completed or even begun in that year, whereas the industrial statistics show only the work performed in the years specified.

Since September, 1939, war construction has shown rapid expansion. The increase has been most marked in industrial, military and air services construction. Large war contracts let in the latter part of 1939 would not, ordinarily, be under way before 1940. The vast amount of Government construction going on across Canada, apart from the indirect stimulus to private construction that rising costs have encouraged, has meant wide activity for this industry, which has suffered severely throughout the depression and of which the recovery has lagged behind other branches.

Of the 1941 total value of work performed, 77 p.c. was represented by entirely new construction. The remainder was for alterations, repairs, maintenance, etc. With regard to type of construction, engineering contracts (such as for streets, highways, harbour and river work, etc.) accounted for 31 p.c. as compared with 43 p.c. in 1940. Buildings accounted for 59 p.c. compared with 54 p.c. in 1940.

Statistics of the Construction Industry, 1941, with Totals for 1936–40

Province or Group	Persons Employed	Salaries and Wages Paid	Cost of Materials Used	Value of Work Performed
	No.	$	$	$
Totals, 1936	**142,346**	**112,846,384**	**122,189,238**	**258,040,400**
Totals, 1937	**151,652**	**150,637,291**	**175,844,435**	**351,874,114**
Totals, 1938	**147,191**	**147,405,398**	**176,562,208**	**353,223,285**
Totals, 1939	**148,414**	**153,442,443**	**189,497,342**	**373,203,680**
Totals, 1940	**149,830**	**180,229,498**	**267,228,786**	**474,122,778**
Province, 1941				
Prince Edward Island	613	703,399	1,095,088	1,938,721
Nova Scotia	9,064	12,539,632	19,268,104	33,152,991
New Brunswick	6,382	6,994,712	10,020,432	18,550,864
Quebec	56,410	73,373,678	105,307,131	181,859,687
Ontario	68,226	93,829,105	153,067,279	261,238,765
Manitoba	7,729	10,560,715	18,867,006	29,609,648
Saskatchewan	5,402	6,686,801	11,112,022	20,668,374
Alberta	7,993	11,072,062	19,497,518	35,295,959
British Columbia	14,539	19,871,677	31,954,159	57,435,615
Totals, 1941	**176,358**	**235,631,781**	**370,188,739**	**639,750,624**
Group, 1941				
Contractors, builders, etc.	139,587	195,020,399	342,114,511	563,977,540
Municipalities	11,415	12,718,111	7,435,966	21,494,113
Harbour Commissions	755	886,915	441,742	1,460,472
Provincial Govt. Depts.	17,341	17,972,042	11,502,042	34,848,840
Dominion Govt. Depts.	7,260	9,034,314	8,694,478	17,969,659

As shown by the following figures, the construction of industrial buildings accounted for 58·6 p.c. of the increase in value of construction in 1941 over 1940. Residential building accounted for 16·7 p.c.

Values of Construction, by Types, 1941 as Compared with 1940

Type of Construction	1941	1940	Increase or Decrease
	$	$	$
Residential	87,586,340	59,925,197	+ 27,661,143
Institutional	15,174,464	17,208,419	− 2,033,955
Commercial	41,157,146	41,748,521	− 591,375
Industrial (includes factories, warehouses, mine buildings, etc.)	177,698,268	80,624,101	+ 97,074,167
Other (includes armouries, barracks, hangars, etc.)	52,874,955	58,294,322	− 5,419,367
Totals, Building Construction	374,491,173	257,800,560	+116,690,613
Streets, highways, etc.	68,358,529	60,468,279	+ 7,890,250
Bridges, watermains, sewers, dams, reservoirs, etc.	40,490,146	23,093,053	+ 17,397,093
Electric stations and transmission lines	37,090,038	33,718,009	+ 3,372,029
Docks, wharves, piers, etc.	6,475,872	4,809,071	+ 1,666,801
Other engineering (includes landing fields, parks, canals, dredging, pile driving, etc.)	48,241,454	42,743,133	+ 5,498,321
Totals, Engineering	200,656,038	164,831,545	+ 35,824,493
Totals, Building Trades	64,603,413	51,490,673	+ 13,112,740
Grand Totals	639,750,624	474,122,778	+165,627,846

Railways.—The expenditures of railways on maintenance of way, and structures and equipment are not included in the census figures of the construction industries given above and are therefore summarized here. For steam railways expenditures for these purposes in 1941 amounted to $178,359,319 as against $146,603,205 in 1940 and $194,000,000 in 1929. For electric railways the total for 1940 was $7,637,134 as against $5,973,288 in 1938 (1941 figures were not available at time of going to press). Expenditures of steam railways for additions and betterments were $18,069,862 in 1941 compared with $73,074,478 in 1940, whereas in the years 1928-31 they averaged $30,000,000 per year.

New Towns Rise to Meet the Demands of War Industry.—A nation-wide scheme for the building of low-cost prefabricated houses has been developed to relieve acute housing shortages in war-industry areas.

Photo by Malak, Ottawa

Volume of Construction, 1941.—The recovery in construction, on the whole, has not paralleled that indicated in many other industries, although substantial improvement has been reported recently. According to the records of the construction contracts awarded, as maintained by MacLean Building Reports, Limited, the value rose from $162,588,000 in 1936 to $224,056,700 in 1937, had dropped to $187,178,500 in 1939 and rose to $346,009,800 in 1940 and $393,991,300 in 1941.

Construction Contracts Awarded in Canada, 1941 and 1942

(MacLean Building Reports, Limited)

Type of Construction	1941		1942	
	No.	Value	No.	Value
		$		$
Apartments	369	6,177,300	67	868,200
Residences	29,140	86,222,100	29,823	78,411,600
Totals, Residential	29,509	92,399,400	29,890	79,279,800
Churches	200	2,808,900	172	1,250,700
Public garages	525	3,347,900	253	959,200
Hospitals	126	6,445,100	141	5,037,600
Hotels and clubs	345	2,220,200	293	5,211,300
Office buildings	481	5,464,700	468	5,090,300
Public buildings	738	50,870,100	988	65,856,300
Schools	220	5,743,600	233	3,261,200
Stores	1,892	9,406,100	992	2,994,600
Theatres	99	2,115,300	55	302,200
Warehouses	1,480	12,130,200	1,252	8,201,400
Totals, Business	6,106	100,552,100	4,847	98,164,800
Totals, Industrial	1,704	92,805,300	1,639	74,084,500
Bridges	101	3,550,900	67	1,351,200
Dams and wharves	100	12,440,900	64	6,950,900
Sewers and watermains	387	6,772,400	229	3,567,800
Roads and streets	673	25,093,000	313	12,414,200
General engineering	52	60,377,300	120	5,780,900
Totals, Engineering	1,313	108,234,500	793	30,065,000
Grand Totals	**38,632**	**393,991,300**	**37,169**	**281,594,100**

The Dominion Bureau of Statistics collects monthly statistics showing the anticipated cost of the building represented by the permits taken out in 58 cities, the record going back to 1920. The value of such work was $76,640,596 in 1942, as compared with $101,047,815 in 1941, a decrease of 31·8 p.c.

The population of the 58 centres mentioned constituted about 36 p.c. of the total population; during the year 1942, their building authorizations amounted to 27·2 p.c. of the total value of the construction contracts awarded throughout Canada.

Employment in Construction.—The construction industries as a whole afforded more employment in 1942 than in any earlier year since 1931. Building was relatively active, a considerable amount of work being carried out in connection with defence projects. The construction and maintenance departments of the railways were also slightly more active as a result of the large volume of traffic. On the other hand, work on the highways showed moderate curtailment as compared with 1941 when employment in this industry was also quiet due to the need to conserve labour and supplies by postponing all but essential work until after the War.

CHAPTER XIII

External Trade

The trade of Canada in 1941 exceeded that of any other year, both imports and exports registering marked increases; this situation continued during 1942, but it is not possible to follow the trend statistically beyond June, 1942, since, at that time, certain restrictions on the publication of trade figures were imposed. Nevertheless, it is logical to assume that the trends have been continued.

By 1942, imports, despite the measures taken to conserve foreign exchange, had more than doubled compared with 1938 (the last full year of peace) and exports had nearly doubled. The excessive increase of imports at first sight is disconcerting, but it is explained by the switching, during this period from a peace-time to a war-time economy. Imports of tools and materials wherewith to build and operate war industries were prerequisite to the more gradual growth of exports that could take place only as war production expanded. Imports from the United States, for instance, were two and one-third times those of 1938. From 1939 to 1940 exports of domestic produce increased by $254,000,000, whereas from 1940 to 1941 they increased by $443,000,000. The export of arms and munitions loomed up largest in the returns, although agricultural exports, sent to feed Britain, increased by $100,000,000 from 1940 to 1941. It is to be expected that the proportionate growth of exports will be found to be more rapid as the War continues and figures available for the first six months of 1942 substantiate this viewpoint:—

	Imports	Domestic Exports	Total Trade
1938	$ 677,451,354	$ 837,583,917	$1,526,135,487
1939	751,055,534	924,926,104	1,686,977,247
1940	1,081,950,719	1,178,954,420	2,275,168,311
1941	1,448,791,650	1,621,003,175	3,089,246,191
1942 (6 months)	842,704,785	1,098,032,127	1,950,530,311

A Completed Army Truck, Crated for Shipment Overseas.

Courtesy, Wartime Information

The two English-speaking countries—the United Kingdom and the United States—have always held an overwhelming predominance in Canadian trade. For instance, in 1938 75·1 p.c. of the Dominion's exports of domestic products went to these two countries (37·2 p.c. to the United Kingdom and 37·9 p.c. to the United States); of imports for home consumption, the proportion was 80·3 p.c. (17·6 p.c. from the United Kingdom and 62·7 p.c. from the United States). The vastly increased volume of trade since the War has not made much change in these percentage relationships. The percentage of imports from the United Kingdom has fallen off and that of exports has increased, while the percentage of imports from the United States has increased somewhat and exports remain about the same. Canada has grounds for satisfaction in that these two overwhelmingly important pre-war channels of trade have remained undisturbed; they are being cut deeper and the nature of the commodities being traded is vastly different, but there has not been the upheaval nor the disturbance that has been experienced in countries not so favourably situated. While this has been the case, the Canadian Government has not ignored what few opportunities remain for developing trade in parts of the world isolated from continental Europe. The way is being paved for closer trade relationships between Canada and the countries of Central and South America in spite of difficulties to be faced in producing certain commodities for export under existing conditions and in the light of reduced shipping facilities. Recent agreements entered into with South American countries should open new fields for Canadian exports when the necessity for producing and exporting munitions of war has ceased.

Non-Commodity Items of Foreign Exchange

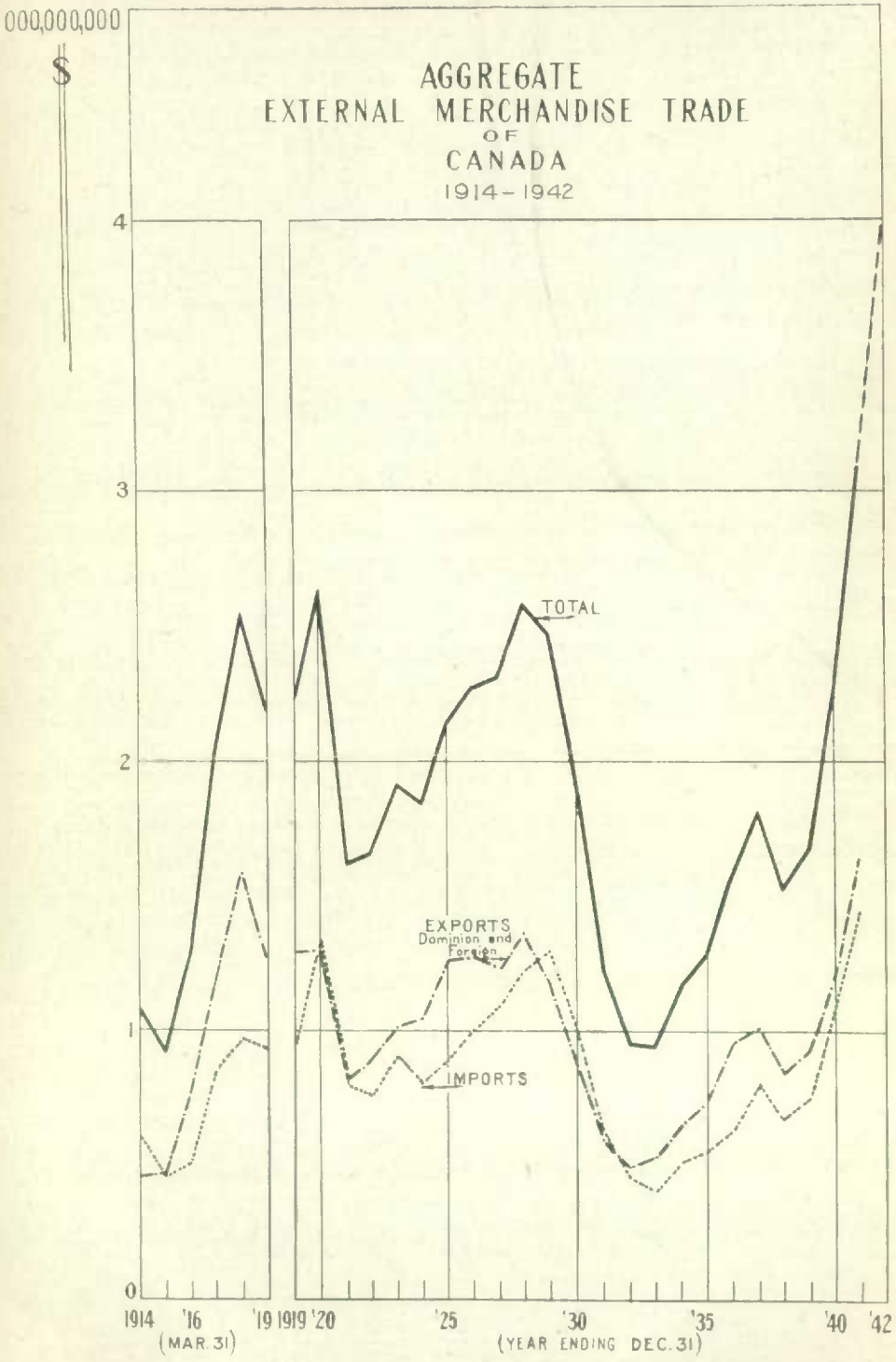
A nation's commodity trade alone cannot be taken as a complete index of its prosperity, for there are many other exchanges besides those of goods, all of which must be taken into account in order to find out the basic state of affairs in regard to total international transactions.

The Tourist Trade

In recent years the tourist trade has become an important source of revenue in certain sections of the Dominion, materially affecting the balance of trade. Tourist expenditures are, in part, the return that Canada derives from her picturesque scenery, fish and game, winter sports, etc. It is impossible to obtain a direct record of expenditures of this kind. Moreover, even a rough estimate of the total is extremely difficult to make, as visitors to Canada are of all classes, engaging in widely different activities or forms of recreation, remaining for varying periods, with expenditures undoubtedly ranging from very small to very large amounts.

Estimates of tourist expenditures in 1940 and 1941 are based on a greater volume of data than was formerly available. New methods were introduced in 1940, and developed in 1941, with the result that for the latter year 76 p.c. of United States motorists entering Canada on travellers' vehicle permits reported their expenditures in Canada as well as a large number of short-term local United States motorists crossing into Canada. At the same time, virtually all the expenditures of Canadian motorists in the United States were covered by a sample which exceeded 95 p.c. of the traffic.

The increased information on tourist expenditures now available indicates that estimates formerly made for pre-war years substantially overstated the volume of expenditures.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AGGREGATE
EXTERNAL MERCHANDISE TRADE
OF
CANADA
1914 – 1942
4
3
2
1
0
TOTAL
EXPORTS
Dominion and Foreign
IMPORTS
1914
'16
(MAR. 31)
'19
1919
'20
'25
'30
'35
'40
'42
(YEAR ENDING DEC. 31)

In 1941 there were 13,978,088 tourist entries from the United States compared with 13,598,777 in 1940.

Expenditures of Foreign Travellers in Canada and Canadian Travellers Abroad, 1940 and 1941

Class of Traveller	1940			1941		
	Foreign Expenditures in Canada	Canadian Expenditures Abroad	Excess of Foreign Expenditures in Canada	Foreign Expenditures in Canada	Canadian Expenditures Abroad	Excess of Foreign Expenditures in Canada
	$'000	$'000	$'000	$'000	$'000	$'000
Travellers from and to overseas countries	7,000	2,600	4,400	4,000	2,750	1,250
Travellers from and to the United States—						
Automobile	49,500	10,300	39,200	54,000	3,750	50,250
Rail	26,500	20,000	6,500	28,000	8,500	19,500
Boat	6,000	1,200	4,800	7,000	700	6,300
Bus (exclusive of local bus)	5,700[1]	3,200[1]	2,500	7,000	1,500	5,500
Aeroplane	1,300[1]	600[1]	700	3,000	1,200	1,800
Other (pedestrians, local bus, etc.)	6,000[1]	4,500[1]	1,500	5,000	2,600	2,400
Totals, United States	95,000	39,800	55,200	104,000	18,250	85,750
Totals, All Countries	**102,000**	**42,400**	**59,600**	**108,000**	**21,000**	**87,000**

[1] Expenditures of travellers by bus and aeroplane cover the period April-December, 1940, only. During the first three months of the year, bus and aeroplane passengers were included under "Other (pedestrians, local bus, etc.)".

The Canadian Balance of International Payments, 1941

The change that has taken place in Canada's international accounts since the start of the War is revealed in the statement of the Canadian balance of international payments for 1941. Most of the more striking effects of the War, which first appeared in the 1940 statement, are more accentuated in the statement for 1941 because of the expansion in war production and in the other war activities of the Dominion. Gross credits on current account were the highest on record, being $1,021,000,000 greater than in 1939. Gross debits of $1,977,000,000 were at a record level, too, although the increase was less than in the case of credits. Consequently, the net balance on current account transactions with all countries increased very sharply in 1941. These impressive proportions being obtained during the War are, of course, related to the great growth in national income that has taken place.

From the point of view of exchange and finance the balance of payments is divided into two clearly defined divisions: the balance of payments between Canada and the sterling area, and the balance of payments between Canada and the rest of the world with which Canada's dealings are on a United States dollar basis. Because of conditions arising from the War, Canada's balance of sterling income over disbursements is no longer freely convertible into United States dollars, whereas before the War, sterling balances were employed in part to cover the deficit in United States dollars. Accordingly, separate statements are shown for transactions with Empire countries and non-Empire countries. In so far as is possible, the statement for Empire countries represents the sterling area and the statement for non-Empire countries represents the United States dollar area. In the case of the balance of payments with the sterling area there has been a greatly expanded surplus

of current credits over debits, while in the balance of payments with the United States dollar area there was, in 1940 and 1941, a growing net deficit on current account.*

Current Transactions with the Sterling Area.—There was a net credit on current account with the sterling area of $804,000,000 in 1941 compared with $423,000,000 in 1940 and $163,000,000 in 1939. The principal factor contributing to this large credit balance in 1941 was the expenditures by the British Government on war equipment, food and materials produced in Canada. The value of exports to the sterling area, including certain prepayments for goods in the process of production in 1941, increased from $436,000,000 in 1939 to $699,000,000 in 1940 and $1,098,000,000 in 1941. These figures exclude exports on Canadian account such as equipment for the Canadian Army in the United Kingdom. Imports of merchandise from the sterling area increased only moderately, being $177,000,000 in 1939, $236,000,000 in 1940 and $279,000,000 in 1941. Most of the increase was from Empire countries other than the United Kingdom.

"Interest and dividend payments" and "all other current transactions" both produced substantial net debits. While interest and dividends paid on British investments in Canada decreased in 1941, the reductions in interest paid on Canadian bonds repatriated from the United Kingdom were partly offset by larger dividend payments. The item "all other current transactions" shows an excess of debits over credits of $34,000,000. The expenditures of the Dominion Government in connection with the maintenance of the Canadian Armed Forces overseas constitutes the bulk of the debits in this item. Among the principal credits in this item are the expenditures on air training in Canada by the British, Australian and New Zealand Governments and other expenditures by Allied Governments on services in Canada connected with the War. The expenditures of Canadian travellers in other parts of the Empire and of Empire travellers in Canada offset each other.

Current Transactions with the United States Dollar Area.—Canada's debit balance on current account with the United States dollar area rose from $26,000,000 in 1939 to $279,000,000 in 1940 and $326,000,000 in 1941. The growth in the debit balance with the United States alone has been from $89,000,000 in 1939 to $301,000,000 in 1940 and $330,000,000 in 1941. The pre-war credit balance on current transactions with other foreign countries has shrunk from $63,000,000 in 1939 to $22,000,000 in 1940 and $4,000,000 in 1941.

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* In 1942, however, the Minister of Finance has indicated that the deficit would be reduced as a result of increasing sales of munitions to the United States under the Hyde Park Declaration. "As I informed the house in introducing the United Kingdom War Appropriation Bill on March 18 this year, liquid reserves of gold and United States dollars held by the Foreign Exchange Control Board and the dominion government declined by $142 million during 1941. In the first quarter of 1942, there was a marked, though in part a temporary, improvement. As a result, the decline in our liquid reserves for the fiscal year 1941-42 was only about $50 million. This welcome change was due to two factors: purchases of Canadian securities by investors in the United States, a method of obtaining exchange which cannot be depended on for really substantial amounts in view of the limited supply of securities available in Canada payable in United States dollars; and payments for sales of munitions under the Hyde Park agreement including some substantial advance payments. While we have reason to believe that these sales will increase, as new contracts are arranged and as larger deliveries are made under existing contracts, the advance payments are, of course, non-recurring.

"The outlook for the fiscal year, 1942-43, is distinctly more cheerful than the results of the calendar year 1941. We cannot expect, however, the full improvement which took place from January to March to continue. Other unfavourable factors have entered the picture, particularly the adverse effect on the tourist trade of the necessary restrictions on the use of gasoline and rubber and the recent decline in newsprint exports. Nevertheless, I look forward with reasonable assurance to transactions under the Hyde Park agreement being sufficient to safeguard our exchange position during the present fiscal year."

See annual Financial Statement of the Minister of Finance, House of Commons Debates, June 23, 1942, pp. 3,888 and 3,889.

Piling Lumber by Travelling Crane.
Courtesy, Wartime Information

The principal factor in the growth of the debit balance with the United States dollar area has been the great expansion in imports of merchandise from the United States. Imports from the United States of merchandise purchased by Canada increased from $472,000,000 in 1939 to $702,000,000 in 1940, and $910,000,000 in 1941. These figures exclude goods imported from the United States on British or other Allied account which are not paid for by Canada. The major element in these increased requirements of United States dollars naturally arises from the program of war production. While direct purchases in the United States of aircraft and other equipment for the Armed Forces have been substantial, there are even heavier disbursements of United States dollars for materials, fuel, capital equipment and component parts required for the war-production program. An important part of these United States dollar requirements arises from the United States dollar content of production in Canada for the United Kingdom. There have also been increased demands for civilian goods from the United States resulting from the high level of incomes.

Exports to the United States dollar area increased from $470,000,000 in 1939 to $503,000,000 in 1940 and $634,000,000 in 1941. The increase in exports to the United States alone was greater than this rise of $164,000,000; with the loss of European and Oriental markets exports to "other foreign countries" declined from $126,000,000 in 1939 to $79,000,000 in 1940 and $68,000,000 in 1941. Only a very small part of the exports to the United States in 1941 represented munitions or other war production sold as a result of the Hyde Park Declaration of April, 1941. Exports resulting from the Declaration did not become substantial until early in 1942.* The prepayments and capital assistance received in this connection in 1941 have been shown as credits in the capital account.

The $204,000,000 received from net exports of non-monetary gold in 1941 was about the same value as in 1940.

Net receipts from the tourist trade were $87,000,000 in 1941 compared with $59,600,000 in 1940. While part of this increase resulted from heavier expenditures by United States tourists in Canada, the larger part was due to the decline in Canadian expenditures in the United States.

Net payments on account of interest and dividends declined to $172,000,000 in 1941 from $190,000,000 in 1940.

Net payments on account of freight and shipping increased sharply from $34,000,000 in 1940 to $65,000,000 in 1941. Freight on coal and other commodities imported from the United States was heavier because of the growth in imports. Payments connected with shipping were also much larger.

* See also footnote to p. 157.

All other current transactions gave rise to a smaller balance of debits in 1941 than in 1940.

Estimated Canadian Balance of International Payments, 1940 and 1941

(Millions of Canadian dollars)

Item	1940[1]			1941[2]		
	Credits	Debits	Net	Credits	Debits	Net
I. Canada and All Countries—						
Current Account—						
Merchandise trade, after adjustment	1,202	1,006	+ 196	1,732	1,264	+ 468
Net exports of non-monetary gold	203	–	+ 203	204	–	+ 204
Tourist expenditures	101	43	+ 58	108	21	+ 87
Interest and dividends	52	311	– 259	60	296	– 236
Freight and shipping	138	132	+ 6	185	167	+ 18
All other current transactions	73	133	– 60	166	229	– 63
Totals—Current Account	1,769	1,625	+ 144	2,455	1,977	+ 478
Special gold transactions[3]	248	248	–	–	–	–
Capital movements	283	475	– 192	566	1,063	– 497
Balancing item[4]	–	–	+ 48	–	–	+ 19
II. Canada and Empire Countries—						
Current Account—						
Merchandise trade, after adjustment	699	236	+ 463	1,098	279	+ 819
Tourist expenditures	6	3	+ 3	3	3	–
Interest and dividends	3	72	– 69	5	69	– 64
Freight and shipping	76	36	+ 40	119	36	+ 83
All other current transactions	38	52	– 14	96	130	– 34
Totals—Current Account—						
United Kingdom	636	289	+ 347	1,093	360	+ 733
Other Empire Countries	186	110	+ 76	228	157	+ 71
All Empire Countries	822	399	+ 423	1,321	517	+ 804
Capital credits	116	–	+ 116	181	–	+ 181
Sub-total	938	399	+ 539	1,502	517	+ 985
Special gold transactions[3]	–	248	– 248	–	–	–
Capital debits	–	334	– 334	–	990	– 990
Balancing item[4]	–	–	+ 43	–	–	+ 5
III. Canada and Non-Empire Countries—						
Current Account—						
Merchandise trade, after adjustment	503	770	– 267	634	985	– 351
Net exports of non-monetary gold	203	–	+ 203	204	–	+ 204
Tourist expenditures	95	40	+ 55	105	18	+ 87
Interest and dividends	49	239	– 190	55	227	– 172
Freight and shipping	62	96	– 34	66	131	– 65
All other current transactions	35	81	– 46	70	99	– 29
Totals—Current Account—						
United States	827	1,128	– 301	1,042	1,372	– 330
Other Foreign Countries	120	98	+ 22	92	88	+ 4
All Non-Empire Countries	947	1,226	– 279	1,134	1,460	– 326
Capital debits	–	141	– 141	–	73	– 73
Sub-total	947	1,367	– 420	1,134	1,533	– 399
Special gold transactions[3]	248	–	+ 248	–	–	–
Capital credits	167	–	+ 167	385	–	+ 385
Balancing item[4]	–	–	+ 5	–	–	+ 14

[1] Revised figures.

[2] Preliminary.

[3] This represents gold received from the United Kingdom in part settlement of her deficiency with Canada, and used in turn to settle part of Canada's deficiency with the United States.

[4] This balancing item reflects possible errors and the omission of certain factors that cannot be measured statistically, such as changes in the timing of payments for goods and services.

Capital Account Transactions with Empire Countries.—Gross capital receipts by Canada from Empire countries totalled $181,000,000 in 1941. The major part of this amount represents capital expenditures in Canada by the Government of the United Kingdom. Capital received by Canada in respect of estates and trusts, claims received for the loss of vessels and other insurance transactions, made up most of the remainder.

Gross capital debits amounted to $990,000,000 in 1941. Of this amount, $73,000,000 represented privately financed capital payments by Canada and declines in the Canadian dollar balances of the sterling area. The remaining amount of $917,000,000 represented the residual requirements of the United Kingdom for Canadian dollars on current and capital account which were supplied by the Dominion Government. Of this total, $189,000,000 was provided by official repatriation, i.e., by the redemption in advance of maturity of certain Dominion, Provincial, and Dominion guaranteed C. N. R. bond issues, held in the United Kingdom. The rest, amounting to $728,000,000, was provided through the accumulation of sterling balances by the Foreign Exchange Control Board. By this action, the Canadian Government ensured that the United Kingdom would be able to continue to buy the food, materials, munitions and war supplies required for the prosecution of the War.

Most of the accumulation of sterling was, in 1942, converted into a Canadian dollar loan to the British Government of $700,000,000. The remainder was used for the repatriation of Dominion and Canadian National Railway securities formerly held by British investors.

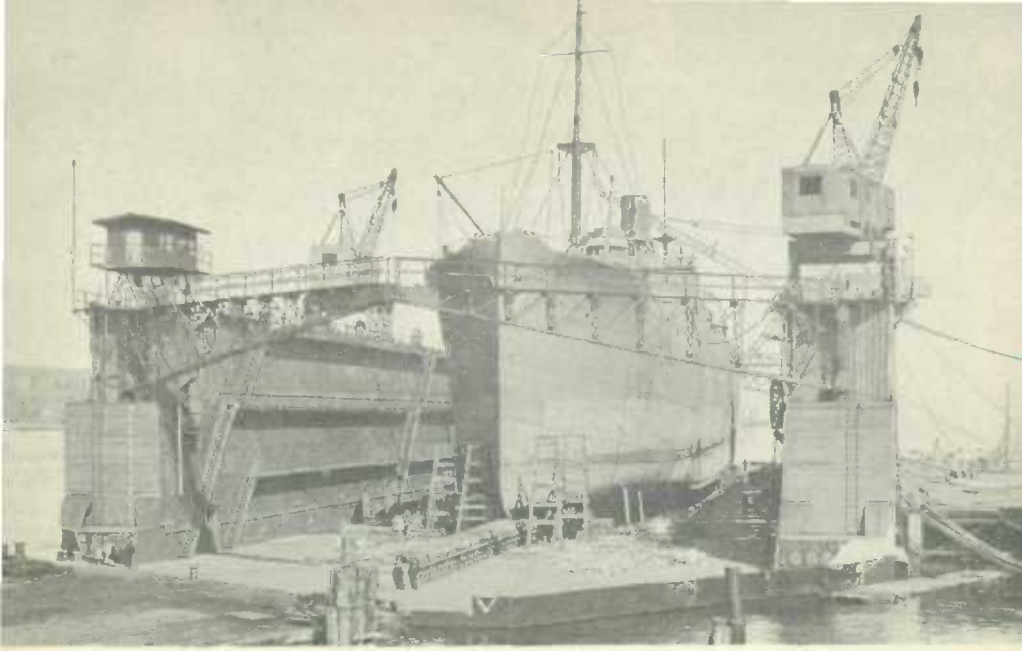
The speech by the Minister of Finance in the House of Commons on the introduction of the Bill providing for a gift and a loan to the United Kingdom describes Canada's financial relations with the United Kingdom since the start of the War. (House of Commons Debates, Mar. 18, 1942.)

In 1940, part of the deficit of the sterling area in Canada had been settled by means of gold, which in turn was used in settling Canada's deficiency with the United States, but no gold has been received from the United Kingdom since December, 1940.

Capital Transactions with Non-Empire Countries.—Capital payments by Canada to non-Empire countries are, of course, subject to the restrictions imposed by foreign exchange control. In general, payments were allowed only in the case of maturing contractual commitments, although certain other types of capital transfers were permitted in minor amounts.

Gross capital payments to non-Empire countries declined from $141,000,000 in 1940 to $73,000,000 in 1941. Retirements of Canadian bonds and debentures held in the United States and repayments of mortgages, loans and advances and other contractual obligations represented the major part of the total. Debits connected with insurance transactions made up most of the remainder.

Capital credits with non-Empire countries totalled $385,000,000 in 1941 compared with $167,000,000 in 1940. Of the total capital credits in 1941, $229,000,000 was received from such sources as sales of securities, capital advances, mortgages, real estate, insurance transactions, etc. Imports of capital from sales of outstanding securities to the United States was the largest single source of these credits. Sales of outstanding Canadian securities in United States markets were very substantial. In addition, there were sales of domestic securities for Canadian dollars of some proportions. At the same time the private liquidation of Canadian holdings



One of the Marine Railway Dry Docks at Halifax, N.S.—This dry dock has a length of 368 ft. and a capacity of 3,000 tons.

Courtesy, Halifax Shipyards Limited

of United States and foreign securities through sales and retirements continued. An important source of capital credits resulted from the Hyde Park Declaration of April, 1941, in the form of prepayments and capital advances in connection with orders placed.

Capital credits also originated in various increases in other forms of United States investments in Canada, and decreases in other forms of Canadian-owned assets in the United States and elsewhere. These credits were in connection with direct investments, insurance transactions, estates and trusts, real estate, short-term financing, etc. There were also capital credits originating in changes in private balances and in the short-term position of firms.

The remaining part of the total capital credits, $156,000,000, was accounted for by a reduction of $142,000,000 (United States) in Canada's official reserves of gold and United States dollars, and represented the means by which Canada covered her residual deficiency on current and capital account with non-Empire countries in 1941.

In 1942, as the Minister of Finance indicated in his Budget Speech on June 23, 1942, the position with respect to Canada's official reserves has improved, as a result of sales of munitions to the United States under the Hyde Park Declaration, and considerable purchases of Canadian securities by United States investors.

CHAPTER XIV

Internal Trade—Prices—Cost of Living

Internal Trade

Internal trade is of primary importance. The task of providing goods and services for home consumption by 11,506,655 (1941 Census) people requires a greater expenditure of economic activity than that required for the prosecution of external trade, even though Canada ranked fifth among trading countries of the world, according to the latest pre-war figure (1938). Internal trade includes the transportation and distribution of goods within the country through the medium of railways, steamships, warehouses, wholesale and retail stores, and other agencies. It also includes all services such as those carried on by doctors, theatres, hospitals, schools, banks, insurance companies, and innumerable others. All such activities, even if not productive of material goods, add substantially to the national income.

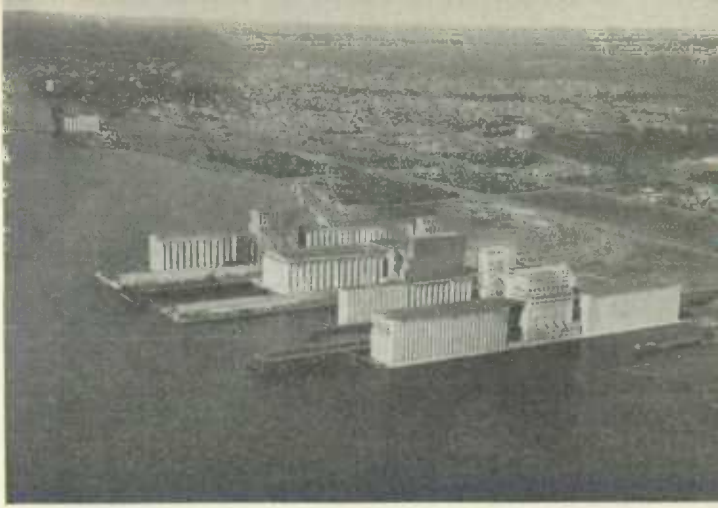
Unfortunately, owing to the many ramifications of internal trade, its statistical measurement presents great difficulties. Nevertheless, some idea of its extent may be gathered from the fact that in the latest year for which figures have been published (1941), the national income arising from productive operations in Canada was estimated at $6,500,000, while the value of exports of Canadian produce (excluding gold) was $1,621,000,000 in that year.

Combinations in Unlawful Restraint of Trade

The Combines Investigation Act (R.S.C. 1927, c. 26) provides for the investigation and prevention of trade combinations, monopolies, trusts and mergers formed or operated against the public interest through agreements affecting the supply or price of any class of goods in unlawful restraint of trade. Such organizations are described by the law as 'combines'. Participation in the formation or operation of a combine is an indictable offence. Methods of unlawfully lessening competition and controlling trade include arrangements among competitors or others to enhance prices, to fix common selling prices or resale prices, and to unduly limit production or facilities for manufacturing or distribution. Provisions with respect to similar offences are contained in the Criminal Code of Canada.

Crated Motor-Trucks at the Wharf of a Canadian Port Ready for Transfer to Ocean-Going Vessels.

Courtesy, Wartime Information



A Group of Grain Elevators at Port Arthur, Ont.

Courtesy, The Financial Post

Investigations of alleged combines are conducted under the direction of a Combines Investigation Commissioner reporting to the Minister of Labour. Proceedings under this Statute by way of investigation, negotiation and, in circumstances where deemed warranted, by prosecution, have been instrumental in checking undue private trade restrictions and in reducing excessive prices arising from monopolistic restrictions and agreements. Recent cases have included alleged combines of wholesalers of fruit and vegetables in Western Canada, manufacturers of corrugated and fibreboard boxes, and manufacturers and wholesalers of tobacco products. In 1942, under charges of unlawful combination laid at Toronto against four companies manufacturing shipping-case materials and against a trade association officer, fines of $17,000 were imposed. Previous convictions of members of an alleged combine of shipping-case manufacturers were upheld by the Supreme Court of Canada. Appeals by all but one of a group of tobacco manufacturers and wholesalers convicted under the Combines Investigation Act in 1941 and sentenced to pay fines totalling $221,500 were allowed in 1942 by the Supreme Court of Alberta.

Wholesale Trade

Complete statistics covering the activities of wholesalers during recent years are not available, but results of annual and monthly surveys based on a sampling plan serve to give some indication of the trend in sales. Conforming with the trend in other spheres of economic activity, sales of wholesale merchants, the dollar volume of which exceeded $3,300,000,000 in 1930, had declined 34 p.c. by 1933. Apart from a slight reversal in 1938, the trend since 1933 has been upward, sales for 1939 reaching the 1930 level and 1940 showing a gain of 11 p.c. over 1939. This upward movement continued in 1941 when an increase of 18 p.c. over 1940 was recorded. Wholesale sales during the first quarter of 1942 were still on the upward grade, total dollar sales for the first three months averaging 24 p.c. higher than for the corresponding period of 1941. The following months witnessed a sharp reduction in the margin between the two years, with declines recorded by the two metal trades, hardware and automotive equipment. Aggregate sales for the first nine months of 1942 averaged 12 p.c. above the similar period of 1941.

Retail Trade

The final stage in the distribution of consumer goods is effected through a great number of retail stores ranging in size from small shops with meagre daily takings

A Contrast in Retail Merchandising.—*Top:* A typical country store of the '90's. *Bottom:* A modern grocery chain store where an attractive display of goods provides maximum appeal to the purchaser.

Courtesy, The Maritime Merchant *and Standard Brands Limited*

to large enterprises whose annual sales are reckoned in millions of dollars. The 1931 Census of Merchandising and Service Establishments showed that there were 125,000 retail stores in Canada in 1930, with annual sales amounting to $2,756,000,000. Another complete Census of Merchandising and Service Establishments was taken covering the year 1941, the results of which are now in process of compilation. When available, they will provide basic data on the wholesale and retail marketing structure of the country for the next ten years.

Conforming with the trend in general business conditions, retail trading declined during the period following the census year until, in 1933, the dollar value of retail sales was 35 p.c. below the 1930 level. A gradual improvement that commenced in the latter part of 1933 continued until 1937. Sales in 1938 and 1939 varied but little from the 1937 level, while a 12 p.c. increase between 1939 and 1940 brought sales for the latter year almost on a par with the 1930 figures. A further increase of 16 p.c. was recorded in 1941.

Chain Stores.—The annual survey of chain stores made in connection with the Census of Merchandising shows that chain stores (other than department store chains) did approximately 19 p.c. of the total retail business in 1940.

Summary Statistics of Chain Stores, 1931-40

Calendar Year	Chains	Chain Stores	Chain Sales	
			Amount	P.C. of Total Sales
	No.	No.	$	
1931	506	8,557	434,199,700	18·7
1932	486	8,398	360,806,200	18·8
1933	461	8,230	328,902,600	18·5
1934	445	8,210	347,186,100	17·9
1935	445	8,024	364,589,800	17·9
1936	457	8,124	394,935,000	17·9
1937	447	7,815	414,133,300	16·9
1938	457	7,692	414,448,300	17·2
1939	446	7,595	432,026,100	17·7
1940	451	7,522	508,553,900	18·6

Current Trends.—In line with wholesale sales, retail sales in Canada moved upward during the first quarter of the year, but fell off sharply in April and the summer months of 1942. The marked increase in the early months of the year was most notable in the footwear and clothing trades and may be attributed, at least in part, to anticipated restrictions on clothing and to regulations affecting clothing styles introduced in the spring by the Wartime Prices and Trade Board. Sales for the first quarter of the year averaged 22 p.c. above the first quarter of 1941. Shoe store sales gained 38 p.c.; men's clothing stores, 39 p.c.; and women's specialty shops, 28 p.c.

The falling-off in retail trade during the following months may be attributed in considerable measure to the fact that purchases that would normally have been made in these months had already been made in the first part of the year. The marked increases that characterized the first three months gave place to much more moderate gains with the result that total sales for the first half of the year averaged 17 p.c. above 1941 compared with the increase of 22 p.c. for the first quarter.

The narrowing of the spread between the two years was continued in the third quarter with July sales up 12 p.c., Aug., 10 p.c., and Sept., 12 p.c., compared with the corresponding periods of 1941. Sales for the first nine months of 1942 averaged 15 p.c. higher than in the preceding year.

Restrictions on the production of motor-vehicles for non-war purposes have drastically curtailed the new-car trade in Canada. There were 16,525 new passenger models sold for $22,790,619 in the first nine months of 1942, down 77 p.c. in number and 76 p.c. in value from the preceding year. More than three-quarters of these cars were sold in the first four months of the year; only 3,804 cars were sold in the five months from May to September, while for the corresponding period of 1941, 32,697 cars were sold.

Retail Services

In addition to the 125,000 retail stores reported in the 1930 Census, there were 42,000 retail service establishments with total receipts of $249,000,000, which provided employment for 109,000 persons. The provision of amusement and personal services form a large proportion of the service groups. Repair shops of many kinds and motor transportation are also included in this category. Gross receipts of firms or persons holding public carriers licences for motor-vehicles totalled approximately $16,000,000 in 1930.

Motion Picture Theatres.—Attendance at motion picture theatres increased 6·9 p.c. from 150,811,667 paid admissions in 1940 to approximately 161,172,000 in 1941.

Box office receipts (exclusive of amusement taxes) were $42,182,000 for 1941, an increase of 12·2 p.c. over the preceding year. Per capita expenditure at motion-picture houses was $3·29 in 1940 and $3·69 in 1941.

Co-operative Associations

In Canada the expansion of co-operative activity has taken place most rapidly and to the greatest degree in the marketing of farm products. In 1941 a total of 699 farmers' co-operative marketing associations with 3,250 places of business reported to the Marketing Service, Economics Division of the Department of Agriculture. Membership totalled 376,405 with sales of farm products and supplies amounting to $220,201,545 during the year. It is estimated that all marketing co-operatives handled approximately 31 p.c. of the main farm products entering commercial channels of trade. In addition 696 farmers' co-operative purchasing associations with 75,280 members reported total business transacted of $21,956,760. The purchasing organizations have been formed principally in the rural areas of Western Canada for the purpose of buying supplies, usually bulk commodities, such as gasoline, tractor fuel, coal, wood and binder twine. Some are operating stores carrying a full line of general merchandise.

Available statistics on consumers' societies in Canadian cities and towns, while incomplete, indicate a total membership of approximately 15,000 persons who buy co-operatively 4 to 5 million dollars worth of consumer's goods annually. Many of the retail societies and the marketing associations are affiliated with the Co-operative Union of Canada. The Union functions in an advisory and educational capacity for its affiliates and has had a guiding influence on the Canadian co-operative movement.

Credit unions are active in all provinces of Canada. Approximately 1,300 were chartered in Canada at Dec. 31, 1941, with a membership close to 240,000. More than $125,000,000 has been loaned to the members of the various credit unions in Canada during their period of operation. Loans in the year 1941 totalled about $10,000,000.

A mutual fire insurance company was formed in Ontario in 1836 and several others, still functioning as farmers' mutuals, were organized between 1850 and 1860. To-day there are about 365 such companies in Canada with net assets of over $9,000,000 and insurance at risk amounting to over $1,000,000,000. These have a long history of successful operation.

Approximately 102,286 or 6 p.c. of the telephones in Canada are operated by rural co-operative companies in which there is a total investment of $20,000,000.

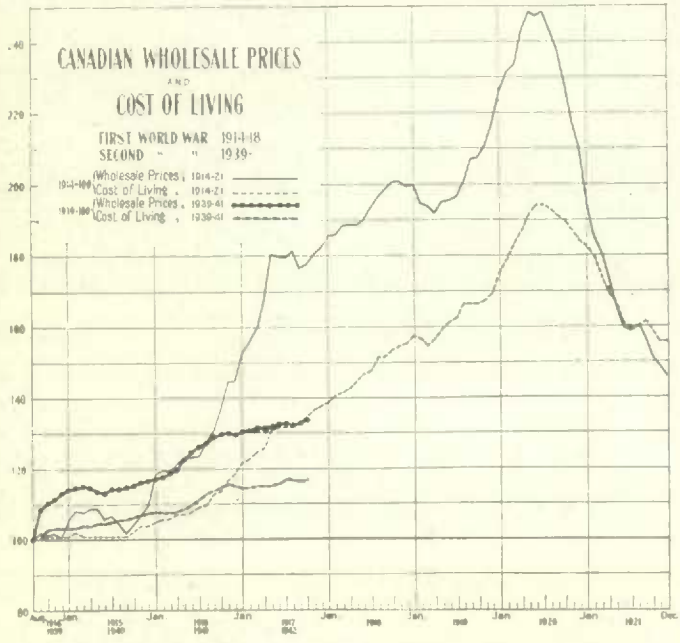
Societies have been formed by fishermen on both coasts for the purpose of canning and marketing fish and buying gear on the co-operative plan. During 1941, 77 fishermen's co-operative societies in Nova Scotia, Quebec and British Columbia with a membership of 4,500 did a business amounting to $2,645,698.

Co-operative housing and co-operative hospitalization and medical schemes are other forms of newer co-operative ventures that are operating successfully.

Wholesale Prices

The rate of increase in price movements, which had accelerated in 1941 particularly in the latter half of the year, moderated after the establishment of price controls in December. Between December, 1940, and December, 1941, the general wholesale price index advanced 11·2 p.c., while in the first ten months of 1942, the rise amounted to 3·4 p.c., almost half of which occurred in the last two months. In 1942 price ceilings for certain products, including beef, potatoes and eggs, were adjusted, and

payments of subsidies to some producers and importers were also revised. General wholesale price indexes on the base 1926=100 ranged between 94·3 in January and 96·8 in October. All main groups, with the exception of fibres, textiles and textile products and chemicals and allied products participated in the advance. Animal products led with a 5·8 p.c. rise. This reflected a higher basic price of milk at several large centres, together with the payment to producers of a 25-cent per cwt. subsidy on milk sold, and also the upward revisions in the maximum wholesale prices of beef. Vegetable products followed with a gain of 4 p.c., owing to higher wheat quotations established for the 1942-43 crop year. Influenced by an advance in September in the New York official price of silver from 35⅛ cents to 44¾ cents per ounce (U.S.



Index Numbers of General Wholesale Prices and Wholesale Prices of Industrial Materials, August, 1939, and January, 1941–October, 1942

(1926 = 100)

Year and Month	Index Numbers of—		Year and Month	Index Numbers of—	
	General Wholesale Prices	Industrial Materials Prices		General Wholesale Prices	Industrial Materials Prices
1939			**1941**—concluded		
August	72·3	65·3	November	94·0	91·0
			December	93·6	91·7
1941			**1942**		
January	84·8	80·1	January	94·3	92·4
February	85·4	81·2	February	94·6	93·2
March	86·0	82·3	March	95·1	93·3
April	86·8	83·4	April	95·0	93·5
May	88·8	86·5	May	95·2	94·2
June	90·1	88·0	June	95·8	94·8
July	91·2	89·3	July	96·0	94·6
August	92·0	90·8	August	95·5	94·3
September	93·3	91·5	September	96·0	94·8
October	93·9	91·3	October	96·8	95·0

funds), the non-ferrous metal products index rose 2·6 p.c. between January and October. Wood, wood products and paper and iron and its products each advanced about 2 p.c. and non-metallic minerals and their products moved up less than 1 p.c. Fibres, textiles and textile products dropped 1·4 p.c. as prices of cotton and rayon yarns were reduced, and chemicals and allied products fell back 1·7 on lower fertilizer quotations.

An index of Canadian farm products prices at 85·7 in October, 1942, was 27·7 p.c. over December, 1940, with more than half of this rise occurring in the first ten months of 1942. Field products at 67·9 and animal products at 115·5, in October, 1942, each averaged about 15 p.c. over the December, 1941, level. During 1942 combined domestic and export demand tended to exceed supplies and this led to the adoption of restrictive measures regarding the export of butter, beef cattle and calves to the United States.

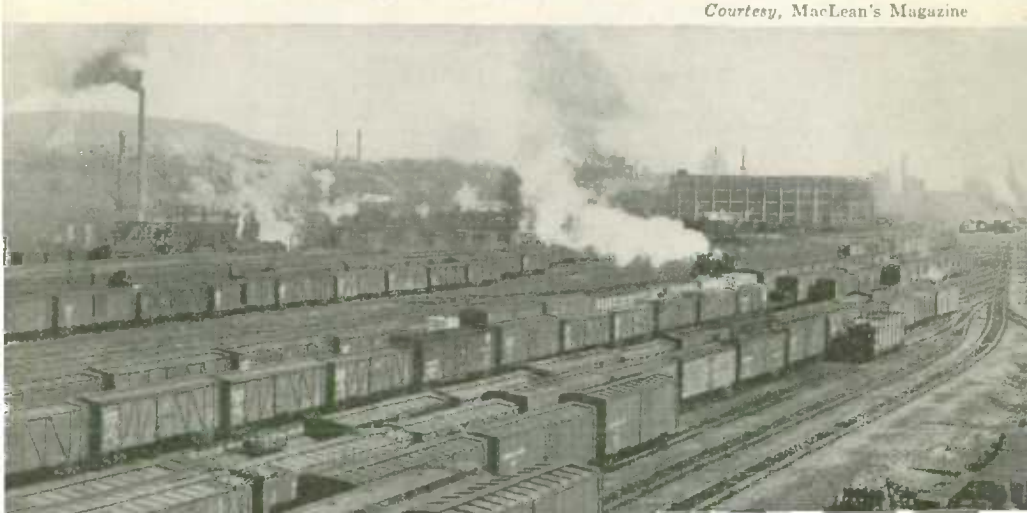
Retail Prices

Problems during One Year of the Price Ceiling.—The dual task of the War-time Prices and Trade Board (p. 24) during the early months of over-all price control, established Dec. 1, 1941, was to hold firmly to the retail price ceiling and carry out the multiplicity of individual price adjustments required to ensure an uninterrupted flow of supplies. Adjustments to take care of the time-lag in prices were made below the retail level by what is called "rolling back the squeeze" or by appropriate devices. Allowances were made in certain cases for normal seasonal variations in prices (e.g., butter, potatoes, meats). Provision was made for establishing prices on goods offered for sale only at certain seasons of the year (e.g., spring and summer wear). Adjustments were made to level out the retail ceiling, for example, in the case of individual retail price anomalies. The general cost of living has been further stabilized by a reduction in the retail price of certain foods through lowering of duties and taxes and payment of subsidies.

In some cases, particularly in the agricultural field, it became necessary to adjust the price structure and provide subsidies with a view to regulating production and effecting a better balance of supply. For new and modified goods and substitute goods (a problem that inevitably grows larger as the War moves on) the Board laid down basic principles for establishing their maximum prices.

Canada's Trade Arteries.—Twenty freight yards at Montreal handle 15,000 cars a day.

Courtesy, MacLean's Magazine



In holding firmly to the retail price ceiling it soon became apparent that in quite a number of industries manufacturing costs were rising to a point where the pressure against the ceiling might either force a breach or involve a substantial extension of subsidy payments. To avoid either of these alternatives, the Board embarked upon a program of economies and simplification in civilian production and distribution. Provision was also made for the payment of subsidies on imports of essential consumer supplies. In a number of instances, rather than pay subsidies to private importers and as the only method of ensuring supplies of certain imports, the Board embarked upon a policy of bulk purchasing.

The Board has taken steps in a number of instances to allocate and ration supplies. Consumer rationing became necessary during 1942 in the case of sugar, tea, coffee and butter. Allocation of materials in short supply has been in operation at the manufacturing or distributing levels for some time (in some cases as early as September and October, 1939) and one of the principal aims of the Board's program of economies and simplification is the conservation of materials such as metals, rubber and oil.

A new emphasis has developed in the Board's work following an announcement by the Prime Minister on August 19 that the Board had been directed to take the necessary steps to curtail all non-essential civilian production with a view to releasing man-power for war production and the Armed Forces.

Cost of Living

In December, 1941, the Bureau's cost-of-living index showed a rise of 14·9 p.c. above the August, 1939 level; by October, 1942, the increase was 16·9 p.c. The peak for the first ten months of 1942 was reached in July when the index stood 2·1 points above the December, 1941, figure. Moderate declines occurred in August and September, but these were almost entirely cancelled in October. The food group, which has been responsible for almost half of the war-time increase in living costs, advanced 4·8 p.c. during the first ten months of 1942. Miscellaneous items and clothing recorded increases of 0·4 p.c. and 0·2 p.c., while rent and fuel were each up by 0·1 p.c. Home furnishings and services declined by 0·1 p.c.

Index Numbers of Living Costs in Canada, 1935-41, and by Months, 1942
(Av. 1935-39 = 100)

Year and Month	Food	Rent	Fuel and Light	Clothing	Home Furnishings	Sundries	Total
1935	94·6	94·0	100·9	97·6	95·4	98·7	96·2
1936	97·8	96·1	101·5	99·3	97·2	99·1	98·1
1937	103·2	99·7	98·9	101·4	101·5	100·1	101·2
1938	103·8	103·1	97·7	100·9	102·4	101·2	102·2
1939	100·6	103·8	101·2	100·7	101·4	101·4	101·5
1940	105·6	106·3	107·1	109·2	107·2	102·3	105·6
1941	116·1	109·4	110·3	116·1	113·8	105·1	111·7
1942—							
January	122·3	111·2	112·9	119·9	118·0	106·8	115·4
February	123·1	111·2	112·9	119·8	118·0	107·1	115·7
March	123·7	111·2	112·9	119·8	118·0	107·1	115·9
April	123·7	111·2	112·9	119·8	118·1	107·1	115·9
May	124·3	111·3	112·9	119·9	118·0	107·1	116·1
June	126·2	111·3	112·6	119·9	117·9	107·1	116·7
July	130·3	111·3	112·5	120·0	117·9	107·1	117·9
August	129·6	111·3	112·5	120·1	117·8	107·1	117·7
September	128·5	111·3	112·5	120·1	117·8	107·1	117·4
October	129·8	111·3	112·8	120·1	117·8	107·1	117·8

CHAPTER XV

Public Finance

The enormous outlays of government funds made necessary by the War, and the adoption of a "pay as you go" policy so far as possible, have made a heavy drain on the resources of the ordinary tax-paying citizen. Provincial and municipal requirements have been curtailed as much as possible in order to free money to enable the Government to finance the war effort. The Dominion Bureau of Statistics is engaged upon the task of compiling uniform statistics of combined revenues and expenditures. Progress has been made in the compilation of combined statistics of public debt and a summary of these is presented in graphic form at p. 171. In considering these statistics, it should be borne in mind that, of the total combined debt of $9,473,847,000, $258,927,000 represents inter-governmental debt, and also that, in the series of diagrams at the foot of the chart, the total funded debt of the Canadian National Railways is included in the total of the Dominion indirect debt, while that portion shown as railway debt includes only the railway liabilities directly guaranteed by the Dominion.

Dominion Finance

Among the powers conferred on the Dominion Government by the British North America Act were: the right to deal with the public debt and property; the right to raise money by any system of taxation (the provinces were limited to direct taxation); and the borrowing of money on the credit of the Dominion. The Department of Finance, established in 1869, exercises supervision, control and direction over all matters relating to the financial affairs, public accounts, etc., of the Dominion.

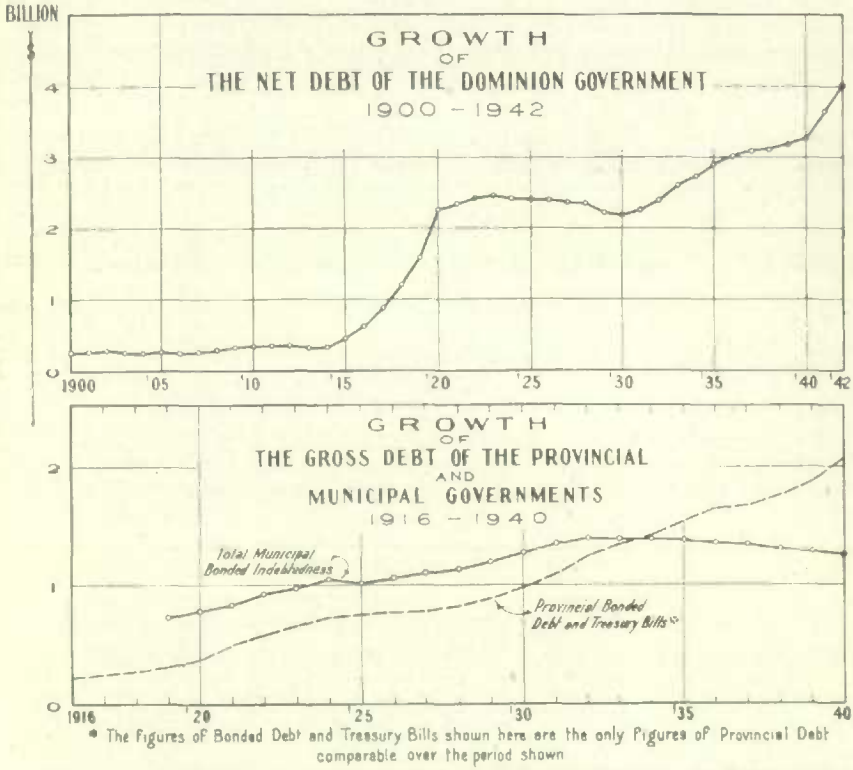
Dominion Finances, 1868-1942

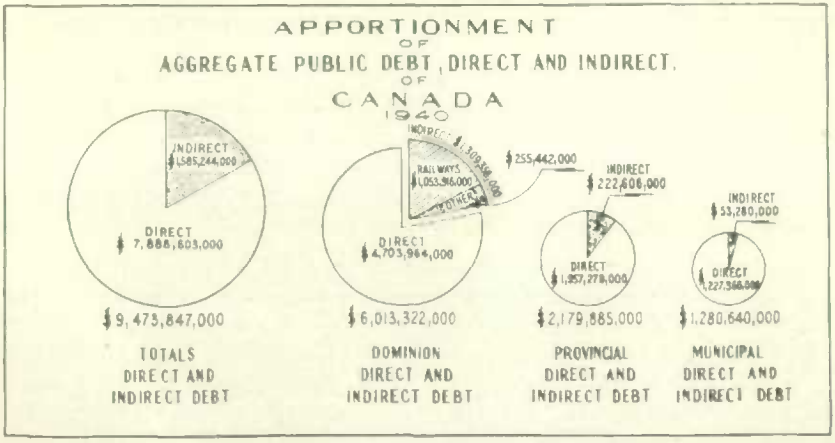
Fiscal Year	Total Revenue	Per Capita Revenue[1]	Total Expenditure	Per Capita Expenditure[1]	Net Debt at End of Year	Net Debt Per Capita[1]
	$	$	$	$	$	$
1868	13,687,928	3·90	14,071,689	4·01	75,757,135	21·58
1871	19,375,037	5·25	19,293,478	5·23	77,706,518	21·06
1881	29,635,298	6·85	33,796,643	7·82	155,395,780	35·93
1891	38,579,311	7·98	40,793,208	8·44	237,809,031	49·21
1901	52,516,333	9·78	57,982,866	10·80	268,480,004	49·99
1911	117,884,328	16·36	122,861,250	17·05	340,042,052	47·18
1921	436,292,184	49·65	528,302,513[2]	60·12	2,340,878,984	266·37
1926	382,893,009	40·51	355,186,423[2]	37·58	2,389,731,099	252·85
1931	357,720,435	34·48	441,568,413[2]	42·56	2,261,611,937	217·94
1932	334,508,081	31·84	448,732,316[2]	42·71	2,375,846,172	226·14
1933	311,735,286	29·19	532,369,940[2]	49·84	2,596,480,826	243·09
1934	324,660,590	30·00	458,157,905[2]	42·33	2,729,978,140	252·22
1935	361,973,763	33·10	478,106,581[2]	43·72	2,846,110,958	260·28
1936	372,595,996	33·79	532,585,555[2]	48·29	3,006,100,517	272·59
1937	454,153,747	40·84	532,005,432[2]	47·84	3,083,952,202	277·33
1938	516,692,749	46·10	534,408,117[2]	47·68	3,101,667,570	276·71
1939	502,171,354	44·37	553,063,098[2]	48·88	3,152,559,314	278·62
1940	562,093,459	49·21	680,793,792[2]	59·60	3,271,259,647	286·40
1941	872,169,645	75·80	1,249,601,446[2]	108·60	3,648,691,449	317·09
1942	1,488,536,343	129·36[3]	1,885,066,055[2]	163·82[3]	4,045,221,161	351·55[3]

[1] Per capita figures for census years are based upon census populations and for intervening years on official estimates. [2] Includes advances to railways and transfers from active to non-active assets. [3] 1941 Census figure of population used (11,506,655).

The Financing of the Present War

The War Budgets.—In September, 1939, immediately following the outbreak of war, Parliament passed a Special War Budget, the main features of which were the introduction of an Excess Profits Tax, a 20 p.c. increase in both personal and





corporate income taxes, higher rates of taxes and customs duties on liquors, tobaccos, wines, tea and coffee. The rate of sales tax was left unchanged at 8 p.c., but canned fish, salted or smoked meats and electricity and gas when used in domestic dwellings were removed from the exempt list.

In June, 1940, came the second Budget of the war period which undoubtedly surpassed in severity any that the Canadian people had previously been called upon to meet. In this Budget emphasis was placed on direct taxation as a means of distributing the war burdens as much as possible according to ability to pay. The income tax was extended to include many new taxpayers and the rates were revised sharply upwards. (See also section headed Income Tax, p. 176.) The National Defence Tax was introduced, and took the form of a flat-rate tax, levied at rates of 2 p.c. and 3 p.c. on total income. The Excess Profits Tax Act was extensively revised. The amended Act provided a tax rate of 75 p.c. of excess profits (previously 50 p.c.) and a proviso that the minimum tax payable would be 12 p.c. of total profits in the taxation year. Taxes on automobiles and smokers' supplies were again raised substantially, and new levies were imposed on radios, radio tubes, cameras and phonographs. Under the Customs Tariff, rates on tobacco and tea were increased and other technical changes made.

The War Exchange Conservation Act passed by Parliament in December, 1940, was designed to discourage the importation of goods from hard-currency countries and to stimulate trade with countries in the sterling area. Amendments to the Special War Revenue Act were passed at the same time providing for higher taxes on passenger automobiles, cameras, phonographs, radio sets and tubes, and for new taxes on electrical and gas appliances, including stoves, refrigerators, lighting fixtures, etc., and on coin- or disc-operated slot machines and vending machines.

In the third War Budget, passed in April, 1941, the rates of personal income tax were again raised sharply, while the rates under the National Defence Tax were increased to 5 p.c. and 7 p.c. An important change in the Income Tax Act provided that the tax on interest and dividends going abroad be increased from 5 p.c. to 15 p.c. The minimum rate of tax payable under the Excess Profits Tax Act was increased from 12 p.c. to 22 p.c. With the introduction of a Succession Duties Act, the Dominion stepped into a field hitherto left exclusively to the provinces.

Sharp increases in rates and heavy new taxes were also introduced in the field of indirect taxation affecting mainly gasoline (hitherto taxed only by the provinces), motion-picture and other entertainments, bets on horse races, travel tickets and bottled soft drinks. No increase in the sales-tax rate was made, but building materials, a large and important group, were removed from the exempt list. Existing tax rates on a considerable list of items—sugar, automobiles and buses, beer, malt and wine, cosmetics, playing cards, cigarette lighters and long-distance telephone calls—were subject to heavy increases.

An important feature of this Budget was the offer that if the provinces would agree to vacate the personal income and corporation tax fields for the duration of the War, the Dominion would reimburse each province either by guaranteeing payment of (*a*) an amount equal to the collections made from such taxes by each province and its municipalities during the fiscal year ended nearest to Dec. 31, 1940, or (*b*) an amount equal to the net debt service actually paid by the province during the fiscal year ended nearest to Dec. 31, 1940, less the revenue obtained from the provincial succession duties during that period. During 1941 and 1942 all nine provinces accepted either alternative and passed the necessary legislation.

The tremendous and increasing cost of Canada's part in the War was reflected in the fourth Budget of the war period brought down in June, 1942. The tax changes followed the predominant pattern of the previous Budgets, with the stress placed on direct taxation of individuals and corporations through the income tax and excess profits tax. Some existing taxes on commodities and services were increased, and other new taxes were introduced, but these were relatively of less importance from a revenue point of view.

In this Budget it was estimated that total expenditures for the fiscal year 1942-43 would reach and probably exceed $3,900,000,000—an amount considerably in excess of all expenditures made by the Government for the entire period during and immediately following the First World War. This amount included direct war expenditures of the Canadian Government in excess of $2,000,000,000, and a gift to Great Britain of $1,000,000,000 to enable her to make purchases of food and equipment in Canada. It was estimated that revenues from the existing tax system would be in the neighbourhood of $1,675,000,000, leaving a gap of $2,225,000,000 between receipts and expenditures. To partly fill this gap, new and higher rates of taxes were introduced to yield an estimated additional revenue of about $375,000,000, and a form of compulsory savings designed to produce about $95,000,000 in 1942-43 was advanced, leaving a deficit to be financed by other means of about $1,755,000,000.

The changes in the income tax on individuals and the excess profits tax applying to corporations were numerous and complex in character. Briefly, the main changes in the personal income tax were: (*a*) the National Defence Tax lost its identity as a separate tax, and was incorporated into the general income tax as a flat-rate "normal" tax, although at higher rates than the former rates of National Defence Tax; (*b*) the graduated rates of tax were steeply increased, and the credit for dependants was changed from a deduction from income to a deduction from tax; (*c*) it was provided that part of the total tax would be refunded after the War as a form of compulsory savings, although the taxpayer was required to pay this part only to the extent not offset by savings in other forms, such as life insurance premiums, principal payments on a residential mortgage and contributions to a pension or superannuation fund; (*d*) a plan was introduced for deduction of income tax at the source from all salaries and wages paid after Sept. 1, 1942, and for compulsory payments of income tax on a quarterly instalment plan in the case of other forms of income; (*e*) certain other changes of a less general character were made, including exemption of pensions paid to members of the Armed Forces, allowance of a deduction from income in respect of medical expenditures in excess of 5 p.c. of the income of the taxpayer, and more favourable treatment for taxable officers of the Armed Forces in Canada and husbands of women earning separate incomes.

Under the Excess Profits Tax Act, rates of tax were considerably increased with the result that corporations having profits in excess of 116 ⅔ p.c. of their standard profits (average 1936-39) pay a tax at the rate of 100 p.c. and no corporation is allowed to retain, after tax, profits equal to more than 70 p.c. of its standard profits. Provision was made, however, for a 20 p.c. refund after the War for corporations to which the 100 p.c. rate of tax applies. Payment of corporate income tax and excess profits tax on a monthly instalment plan parallels the system of deduction at the source in the case of individuals.

In the field of indirect taxation, additional revenue was found by raising existing taxes on spirits, tobacco, cigarettes, soft drinks, passenger transportation, communications and miscellaneous other articles and services. Certain new taxes were

introduced at the manufacturer's level, the normal point of levying sales and excise taxes under Dominion tax law, including taxes on candy, chewing gum, photographic films and supplies, luggage, fountain pens and pencils and pipes and other smokers' accessories, while a radical departure was made with the introduction of taxes to be collected by stamps at the retail level on a list of luxury articles, including jewellery, cut glass and crystal ware, clocks and watches, articles made wholly or in part of certain materials, and chinaware other than that used in preparing and serving food and drink. Another innovation was a tax collected directly on expenditures made by patrons of certain cabarets and dance halls.

Minor amendments were made to the Succession Duty Act and the Customs Tariff, and the taxes on insurance premiums levied under the Special War Revenue Act were amended in implementation of tax changes effected by the Dominion-Provincial agreements.

Revenues and Expenditures

In the fiscal year ended Mar. 31, 1942, both revenues and expenditures reached levels far in excess of any year in the history of the Dominion. Revenues increased by $616,366,000 to $1,488,536,000, or about 70 p.c. over the previous year, a rise to which both new and old sources made substantial contribution, as will be seen from the table on p. 175. Of total expenditures of $1,885,000,000, disbursements on the War accounted for $1,340,000,000, or over 71 p.c. Ordinary expenditures, covering the normal operating costs, increased approximately $54,000,000 due mainly to increased debt charges arising out of heavier borrowing due to the War and the payment of compensation to the provinces under the Dominion-Provincial taxation agreements (see p. 172). The increase in special expenditures of $21,000,000 was more than accounted for by the disbursements of $30,600,000 for wheat acreage reduction payments. Expenditures under the heading "government-owned enterprises" decreased by approximately $17,000,000, chiefly because the Canadian National Railways operations showed a surplus for the calendar year 1941. The over-all deficit for the year amounted to $396,530,000, an increase of only $19,000,000 over that of the previous year.

War Loans

The First and Second War Loans and the 1941 Victory and Second Victory Loans were sold by the Government to the Canadian public to provide a part of the funds required for various purposes that were not covered by revenue. The First War Loan, dated Feb. 1, 1940, was sold in an amount of $250,000,000 ($200,000,000 for cash); the Second War Loan, dated Oct. 1, 1940, was sold in an amount of $324,945,700 ($300,000,000 for cash); the 1941 Victory Loan, dated June 15, 1941, was sold in a total amount, for the two maturities, of $836,820,250 ($730,376,250 for cash). The Second Victory Loan dated Mar. 1, 1942, was sold in a total amount, for the three maturities, of $996,706,900 ($843,127,900 for cash) from 1,681,267 subscribers. The Third Victory Loan, dated Nov. 1, was sold in a total amount for two maturities of $991,000,000 (all cash) from 2,040,000 subscribers.

War Savings Certificates.—To provide a form of savings for those not able to purchase the bonds of larger denominations of Victory and War Loans and to provide a means of regular savings, the Government instituted the sale of War Savings Certificates and Stamps in May, 1940. The Stamps are sold in the denomination of 25 cents and may be accumulated for the purchase of War Savings Certificates. The Certificates are issued at a cost to the purchaser of $4, $8, $20, $40 and $80, and

War Issue of Canadian Stamps.—Each impression on the plate that prints Canada's stamps is made in soft steel with a hard steel roller. Here the plate-making process is completed.

Courtesy, Wartime Information

if held to maturity, seven and one-half years after issue date, are redeemable at $5, $10, $25, $50 and $100, respectively, and for lesser amounts if redeemed prior to maturity. The yield to the investor, if held to maturity, is 3 p.c., compounded semi-annually. From May 27, 1940, to Nov. 30, 1942, Certificates having a purchase value of $185,572,796 were sold.

Summary of Total Revenues and Expenditures, Fiscal Years 1938–42

Item	1938	1939	1940	1941	1942
	$'000	$'000	$'000	$'000	$'000
Revenues					
Customs Import Duties	93,456	78,751	104,301	130,757	142,392
Excise Duties	52,037	51,314	61,032	88,608	110,091
Income Tax	120,366	142,026	134,449	220,471	403,606
National Defence Tax	–	–	–	27,672	106,637
Excess Profits Tax	–	–	–	23,995	135,168
Sales Tax	138,055	122,139	137,446	179,701	236,183
War Exchange Tax	–	–	–	61,932	100,874
Other taxes	44,738	41,477	30,457	37,404	125,962
Totals, Revenues from Taxation	448,652	435,707	467,685	770,540	1,360,913
Non-tax revenues	61,646	62,310	73,931	89,215	102,911
Totals, Ordinary Revenues	510,298	498,017	541,616	859,755	1,463,824
Special receipts and other credits	6,395	4,154	20,477	12,415	24,712
Totals, Revenues	**516,693**	**502,171**	**562,093**	**872,170**	**1,488,536**
Expenditures					
Ordinary Expenditures	414,891	413,032	398,323	390,629	444,778
Capital Expenditures	4,430	5,424	7,030	3,358	3,430
War Expenditures (special)	–	–	118,291	752,045	1,339,674
Other special expenditures[1]	68,535	71,895	89,113	42,869	63,976
Government-owned enterprises[2]	44,833	58,944	42,079	18,182	1,214
Other charges	1,719	3,768	25,958	42,518	31,994
Totals, Expenditures	**534,408**	**553,063**	**680,794**	**1,249,601**	**1,885,066**
Deficits	**17,715**	**50,892**	**118,701**	**377,431**	**396,530**

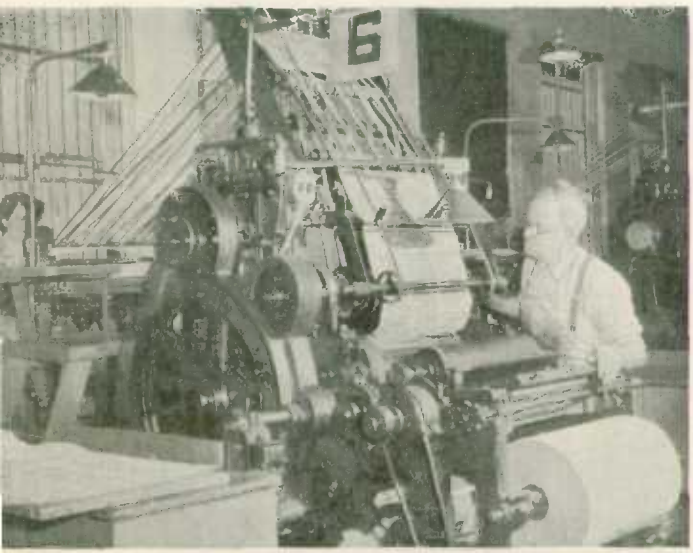
[1] Includes $43,948,000 grants-in-aid to provinces and relief projects and $24,586,000 special drought area relief in 1937–38; $25,000,000, $27,000,000, $10,500,000 and $12,600,000 reserve against estimated loss on wheat guarantees for 1938–39, 1939–40, 1940–41, and 1941–42, respectively.

[2] Includes net income deficit of the Canadian National Railways incurred in the calendar years 1937 to 1940 as follows: $42,346,000, $54,314,000, $40,096,000 and $16,965,000, taken into the accounts of the Dominion in the fiscal year after the close of the calendar year.

In June, 1940, arrangements were made to issue Non-Interest Bearing Certificates in the denomination of one dollar or over, maturing June 15, 1945, but subject to redemption at the option of the holder at any time after six months from the date of issue.

Income Tax

The income tax was introduced during the War of 1914-18, as part of what is still known as war-tax revenue. It is a war tax in name only, for even before the outbreak of the present war it had become a permanent and important part of the taxation structure, and the chief means of raising ordinary revenue. It is now, of course, playing a still more important role in the raising of revenue. In many respects, it is an ideal form of direct taxation; the incidence is admittedly fair and just and the machinery for the collection of this tax was ready to hand.



Printing Bank Notes.—The sheets on the left have received their first impression and are being run through the press for their second and final impression.

Notes being carefully examined and checked before being sent to the Bank of Canada.

Photos by Mokal, Ottawa

In the fiscal year 1940-41 the income (individual and corporation) assessed for Dominion income tax totalled $1,527,581,278. The income tax actually collected in the fiscal year amounted to $207,428,788.

As an indication of the extent to which the income tax bears upon those in the higher income brackets, it may be pointed out that individuals in receipt of incomes of $4,000 or less numbered over 81 p.c. of the total, but were assessed for less than 10 p.c. of the amount levied. In the case of corporations, those earning up to $10,000 constituted 76 p.c. of the total number, but were assessed for less than 5 p.c. of the total tax; on the other hand, corporations with an income of $50,000 or over, amounting to 8·6 p.c. of the total number, were assessed for 84·9 p.c. of the tax levied.

Individual and Corporate Incomes and Income Tax Assessed, Fiscal Year 1940–41

Income	Taxpayers		Net Income Assessment		Tax Assessed	
	Number	P.C. of Total	Amount	P.C. of Total	Amount	P.C. of Total
			$'000		$'000	
Individuals						
Up to $2,000	127,954	42·60	174,150	17·59	1,535	2·93
$ 2,000 to $ 3,000	72,502	24·14	180,673	18·24	1,608	3·07
$ 3,000 to $ 4,000	43,021	14·32	144,307	14·57	1,869	3·57
$ 4,000 to $ 5,000	19,581	6·52	87,426	8·83	1,695	3·24
$ 5,000 to $ 6,000	10,346	3·44	56,695	5·72	1,576	3·00
$ 6,000 to $ 7,000	6,524	2·17	42,234	4·27	1,485	2·83
$ 7,000 to $ 8,000	4,435	1·48	33,380	3·37	1,432	2·73
$ 8,000 to $ 9,000	2,830	0·94	24,268	2·45	1,203	2·30
$ 9,000 to $10,000	2,235	0·74	21,341	2·16	1,231	2·35
$10,000 to $15,000	5,737	1·91	70,086	7·08	5,311	10·14
$15,000 to $20,000	2,268	0·75	39,950	4·03	4,482	8·56
$20,000 to $25,000	977	0·33	21,965	2·22	3,229	6·16
$25,000 to $30,000	601	0·20	16,750	1·69	2,931	5·60
$30,000 to $35,000	361	0·12	11,517	1·16	2,275	4·34
$35,000 to $40,000	257	0·09	9,661	0·98	2,104	4·02
$40,000 to $45,000	183	0·06	7,801	0·79	1,847	3·53
$45,000 to $50,000	99	0·03	4,880	0·49	1,225	2·34
$50,000 or over	473	0·16	43,166	4·36	15,341	29·29
Totals	**300,384**	**100·00**	**990,250**	**100·00**	**52,379**	**100.00**
Debit adjustments	–	–	–	–	834	–
Net Totals	**300,384**	–	–	–	**51,545**	–
Corporations						
Up to $2,000	8,115	51·09	4,661	0·87	716	0·94
$ 2,000 to $ 3,000	1,089	6·86	2,691	0·50	398	0·52
$ 3,000 to $ 4,000	789	4·97	2,756	0·51	410	0·54
$ 4,000 to $ 5,000	570	3·59	2,569	0·48	380	0·50
$ 5,000 to $ 6,000	417	2·63	2,326	0·43	340	0·45
$ 6,000 to $ 7,000	337	2·12	2,200	0·41	322	0·42
$ 7,000 to $ 8,000	269	1·69	1,986	0·37	292	0·38
$ 8,000 to $ 9,000	233	1·47	2,007	0·37	290	0·38
$ 9,000 to $10,000	250	1·57	2,273	0·42	335	0·44
$10,000 to $15,000	756	4·76	9,497	1·77	1,383	1·81
$15,000 to $20,000	477	3·00	8,374	1·56	1,209	1·58
$20,000 to $25,000	351	2·21	8,070	1·50	1,146	1·50
$25,000 to $30,000	257	1·62	7,075	1·32	989	1·30
$30,000 to $35,000	194	1·22	6,305	1·17	873	1·14
$35,000 to $40,000	172	1·08	6,364	1·19	910	1·19
$40,000 to $45,000	127	0·80	5,438	1·01	752	0·98
$45,000 to $50,000	105	0·66	5,001	0·93	702	0·91
$50,000 or over	1,369	8·62	457,125	85·07	64,875	84·90
Unclassified	7	0·04	613	0·12	94	0·12
Totals	**15,884**	**100·00**	**537,331**	**100·00**	**76,416**	**100·00**
Debit adjustments	–	–	–	–	1,016	–
Net Totals	**15,884**	–	–	–	**75,400**	–

Provincial Finance

Provincial revenues, originally obtained from Dominion subsidies, the public domain and certain limited forms of taxation, have increased from $5,519,000 in 1871 to $302,526,000 in 1940.

Aggregate Provincial Revenues and Expenditures

Fiscal Year	Ordinary Revenues	Ordinary Expenditures	Item	Ordinary Revenues[2]	Ordinary Expenditures[2]
	$	$		$	$
1901	14,074,991	14,146,059	1940, by Provinces		
1921	102,030,458	102,569,515	Prince Edward Island	2,030,366	2,152,101
1926	146,450,904	144,183,178	Nova Scotia	16,443,946	15,497,608
1929	183,598,024	177,542,192	New Brunswick	12,459,611	11,921,467
1930	188,154,910	184,804,203	Quebec	59,153,857	66,441,201
1935	160,567,695[1]	181,175,687[1]	Ontario	106,384,870	109,618,967
1936	232,616,182	248,141,808	Manitoba	20,223,411	20,223,411
1937	268,497,670	253,443,737	Saskatchewan	25,002,817	25,006,591
1938	287,955,846	273,861,417	Alberta	24,410,040	21,922,189
1939	296,873,259	289,228,598	British Columbia	36,417,312	33,037,276
1940	302,526,230[2]	305,820,811[2]	**Totals**	**302,526,230**	**305,820,811**

[1] Nova Scotia figures are for fourteen months and Ontario for five months. [2] Subject to revision.

Gross provincial bonded indebtedness, which totalled $218,876,000 in 1916 had increased to $1,734,275,912 in the fiscal years of the provinces ended nearest to Dec. 31, 1940. At that time, sinking funds were available to the amount of $156,735,820, leaving a net funded debt of $1,577,539,092. To this total must be added other direct liabilities, such as treasury bills and savings deposits, amounting to $379,739,584 or a total of net direct liabilities of $1,957,278,676. This total was apportioned among the provinces as follows: Prince Edward Island, $9,467,733; Nova Scotia, $98,478,264; New Brunswick, $97,043,223; Quebec, $387,747,347; Ontario, $729,815,356; Manitoba, $116,384,140; Saskatchewan, $207,460,114; Alberta, $151,963,036; British Columbia, $158,919,463.

Stoney Creek Traffic Circle, Queen Elizabeth Highway, Ont.—The building and maintenance of roads and highways accounts for a substantial part of provincial expenditures.

Courtesy, Ontario Department of Highways

Municipal Finance

Taxation.—There are 4,324 municipal governments in Canada and their chief source of revenue is from the taxation of real estate, though in some provinces municipal governments have imposed income, business and personal property taxes. While there is a lack of uniformity in the methods of taxation, which renders true comparability impossible, the total tax receipts as reported for all municipalities amounted to $252,360,420 in 1931 and in 1939, which is the latest year for which records are available, the total tax receipts were $269,414,223.

The municipal expenditures are largely met out of the taxation revenue and provide for educational requirements, streets and roads, sanitation, fire and police protection, charities, social relief, etc. The depression years added heavily to normal real estate tax burdens, owing to curtailment of building requirements, commercial, industrial and residential. This affected the construction industry despite the encouragement offered by the National Housing Act. Unemployment ensued and municipalities had to bear their share of necessary relief charges, which increased the ordinary taxes.

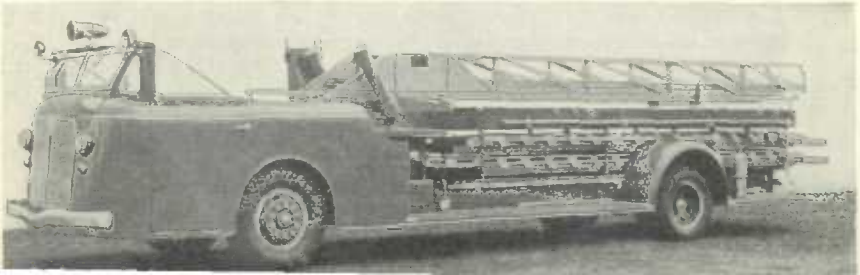
Bonded Debt.—As explained in the foregoing paragraph, the development of educational facilities and increased expenditures for municipal requirements could not be met out of current revenues, so debenture issues had to follow. The following table shows municipal bonded debt by provinces for 1919 and for the provincial fiscal years ended nearest to Dec. 31, 1940, together with sinking funds, offsetting, for the same period. The statistics for 1919 and those for the latest period are not entirely comparable, as more complete details are now available, which were lacking at the earlier date; the figures are not entirely inclusive even at present, as in Ontario the statistics of separate school boards and school districts are not shown, nor are those for rural schools in the Maritime Provinces.

Municipal Bonded Debt for 1919 and 1940 and Sinking Funds for 1940, by Provinces

Province	Total Gross Bonded Indebtedness of Municipalities		Sinking Funds Offsetting Gross Bonded Indebtedness
	1919	1940	1940
	$	$	$
Prince Edward Island	970,100	3,215,000	569,171
Nova Scotia	17,863,881	35,592,828	13,789,951
New Brunswick	11,188,467	26,557,555	8,683,061
Quebec	199,705,568	515,801,393	87,175,040
Ontario	243,226,877	365,660,638	53,420,026
Manitoba	55,562,788	78,849,060	34,625,664
Saskatchewan	39,585,388	51,053,574	22,152,387
Alberta	66,870,464	54,869,233	9,323,640
British Columbia	94,741,615	112,400,950	29,603,523
Totals	**729,715,148**	**1,244,000,231**	**259,342,463**

The provision of adequate fire-fighting services is a main function of municipal government. Canadian municipalities accept the responsibility seriously and provide themselves with the most efficient fire-fighting equipment that they can afford. This newest type of aerial extension ladder costs over $20,000.

Courtesy, Ottawa Fire Department



CHAPTER XVI

Currency—Banking—Insurance

Currency

The use of the dollar as a monetary unit was extended throughout the new Dominion by the Uniform Currency Act of 1871. The Canadian gold dollar weighs 25·8 grains, nine-tenths fine gold, and thus contains 23·22 grains of gold. Only very limited issues of gold coin have ever been made. British and United States gold coin are legal tender in Canada. Subsidiary silver coin is legal tender up to $10; the 5-cent piece (now made of zinc and copper) is legal tender up to $5; and the 1-cent bronze coin, up to 25 cents. Since 1931, the Government has permitted the export of gold only under licences issued by the Department of Finance, thus conserving the gold resources of the nation to meet the external obligations, and Canadian mines now dispose of their gold through the Royal Canadian Mint according to definite conditions of purchase.

Bank Notes.—Under the Bank Act the chartered banks may issue notes of the denominations of $5 and multiples thereof to the amount of their paid-up capital. This amount was reduced by 5 p.c. per annum for a period of five years from Jan. 1, 1936, and is to be reduced by 10 p.c. per annum for a period of five years from Jan. 1, 1941. In case of insolvency, bank notes are a first lien on assets and for over sixty years no note holder has lost a dollar.

In addition to notes of the chartered banks, there are also in circulation notes of the Bank of Canada. These notes may be issued to any amount as long as the Bank maintains a reserve in gold equal to at least 25 p.c. of its note and deposit liabilities (but see p. 181).

Bank Notes Outstanding, Representative Years, 1900–42

(Yearly Averages)

Year	Dominion or Bank of Canada Notes Outstanding	Chartered Bank Notes Outstanding	Year	Dominion or Bank of Canada Notes Outstanding	Chartered Bank Notes Outstanding
	$	$		$	$
1900	26,550,465	46,574,780	1935	127,335,340 [1]	125,644,102
1910	89,628,569	82,120,303	1936	105,275,223 [1]	119,507,306
1920	305,806,288	288,800,379	1937	141,053,457 [1]	110,259,134
1929	204,381,492	178,291,030	1938	161,137,059 [1]	99,870,493
1931	153,079,362	141,969,350	1939	184,904,919 [1]	94,064,907
1932	165,878,510	132,165,942	1940	277,095,305 [1]	91,134,378
1933	179,217,446	130,362,488	1941	406,433,409 [1]	81,620,753
1934	190,261,981	135,537,793	1942	561,223,325 [2]	72,641,641 [2]

[1] Since Mar. 11, 1935, the figures used represent Bank of Canada notes.
[2] Average for eleven months.

Banking

Banking in Canada began to develop some of the features of a central bank system soon after Confederation. These in chronological order are:—

(1) *Central Note Issue*, permanently established with the issue of Dominion notes under legislation of 1868.

(2) *The Canadian Bankers' Association*, established in 1900 to effect greater co-operation in the issue of notes, in credit control, and in various other ways.

(3) *Central Gold Reserves*, established in 1913.

(4) *Re-discount Facilities*, made a permanent feature of the system in 1923, provided the banks with a means of increasing their legal tender cash reserves at will.

(5) *The Bank of Canada*, established in 1935.

The Bank of Canada.—Legislation was enacted in 1934 to establish the Bank of Canada as a central or bankers' bank. All of its stock is now vested in the Dominion Government. The Bank regulates the statutory cash reserves of the chartered banks, which are required to maintain not less than 5 p.c. of their deposit liabilities payable in Canadian dollars in the form of deposits with, and notes of, the Bank of Canada. The Bank also acts as the fiscal agent of the Dominion of Canada and may, by agreement, act as banker or fiscal agent for any province. Bank of Canada notes, which are legal tender, are the main source of paper money in Canada and will become increasingly so since the chartered banks must gradually reduce their note issues to 25 p.c. of their paid-up capital.

The Bank of Canada is empowered to buy and sell securities in the open market; to discount securities and commercial bills; to fix minimum rates at which it will discount; to buy and sell bullion and foreign exchange. Under the Exchange Fund Order, 1940, the Bank transferred its reserve of gold to the Foreign Exchange Control Board in which Canada's exchange reserves have now been centralized. At the same time the Bank of Canada's statutory 25 p.c. minimum gold reserve requirement against its note and deposit liabilities was temporarily suspended.

Commercial Banking.—The branch bank is perhaps the most distinctive feature of the Canadian system as it exists to-day, and for a country such as Canada, vast in area and with a small population, the plan has proved a good one. A result of the growth of branch banks was the development of a partly centralized system. The number of chartered banks, which was 36 in 1881 and 34 in 1901, decreased to 25 in 1913 and is now only 10, but has been accompanied by a great increase in the number of branches. In 1868 there were only 123 branch banks in Canada. By 1902 the number, including sub-agencies, had grown to 747, by 1916 to 3,198 and by 1929 to 4,069, but by the beginning of 1942 the number had decreased to 3,300. During 1942, in the effort to conserve man-power, numerous branches of the chartered banks

The Head Office Building of Canada's Oldest Bank—the Bank of Montreal. On Nov. 3, 1942, the completion of 125 years of service to the people o Canada was observed.

have been closed down temporarily, but this has been planned between the banks so that no area in Canada is left without adequate banking facilities. From 1867 to October, 1942, the total assets have grown from $78,000,000 to $4,690,000,000.

The first dollar bills in Canada were issued by the Bank of Montreal in 1819. Previously both Upper and Lower Canada had to depend on outside currencies and a large volume of internal business was done by barter.

The banks of Canada had among them, at the beginning of 1942, 135 branches (not including sub-agencies) in foreign countries, mainly in Newfoundland, the West Indies, Central and South America.

Statistics of Individual Chartered Banks as at Oct. 31, 1942

Bank	Branches in Canada and Abroad[1]	Total Assets	Liabilities to Shareholders	Liabilities to the Public	Total Liabilities	Loans and Discounts	Deposits by the Public
	No.	$ '000,000	$ '000,000	$ '000,000	$ '000,000	$ '000,000	$ '000,000
Bank of Montreal	483	1,175	75	1,099	1,174	261	1,041
Bank of Nova Scotia	291	412	36	374	410	127	338
Bank of Toronto	175	204	16	185	201	60	179
Banque Provinciale du Canada	137	73	5	67	72	20	65
Canadian Bank of Commerce	516	887	50	836	886	271	779
Royal Bank	677	1,254	55	1,195	1,250	322	1,127
Dominion Bank	133	212	14	198	212	75	185
Banque Canadienne Nationale	221	201	12	188	200	57	182
Imperial Bank of Canada	195	244	15	228	243	81	217
Barclay's Bank (Canada)[2]	2	28	2	26	28	4	19
Totals, Oct., 1942	–	**4,690**	**280**	**4,396**	**4,676**	**1,278**	**4,132**
Totals, 1941[3]	**2,830**	**4,008**	**279**	**3,712**	**3,991**	**1,403**	**3,465**
Totals, 1940[3]	**2,846**	**3,707**	**279**	**3,411**	**3,690**	**1,324**	**3,180**
Totals, 1939[3]	**2,861**	**3,592**	**279**	**3,298**	**3,578**	**1,244**	**3,061**
Totals, 1938[3]	**2,875**	**3,349**	**279**	**3,057**	**3,336**	**1,201**	**2,824**
Totals, 1935[3]	**2,978**	**2,957**	**278**	**2,668**	**2,946**	**1,276**	**2,427**
Totals, 1930[3]	**3,598**	**3,237**	**305**	**2,910**	**3,215**	**2,065**	**2,517**
Totals, 1920[3]	**4,876**	**3,064**	**252**	**2,784**	**3,036**	**1,935**	**2,438**
Totals, 1910[3]	**2,621**[4]	**1,211**	**179**	**1,019**	**1,198**	**870**	**910**
Totals, 1900[3]	**641**	**460**	**98**	**356**	**454**	**279**	**305**

[1] As at Dec. 31 of previous year. Does not include sub-agencies. [2] Barclay's Bank commenced operations in Canada in September, 1929. [3] Averages from the respective monthly statements, except in the case of the numbers of branches in Canada and abroad, which are as at Dec. 31. [4] 1911.

Bank Clearings and Bank Debits.—Inter-bank transactions recorded through the clearing houses form a valuable indication of the trend of business. However, they do not tell the whole story, since numerous transactions between persons who carry their accounts in the same bank are not recorded in bank clearings; also, every amalgamation of banks lessens the total volume of clearings. Again, head-office clearings have been effected through the Bank of Canada since Mar. 11, 1935, and this has tended to increase exchanges compared with previous years. For these reasons, a record of cheques debited to accounts at all branches at clearing-house centres is considered to possess greater reliability as a barometer of economic conditions. From 1929 there was a steady decline to the 1932 level of $25,844,000,000, but in the next four years the movement was generally upward, reaching $35,929,000,000 in 1936. In 1937 and 1938 there were recessions, a slight increase was shown for 1939, but for 1940 the increase for the year amounted to 9 p.c., and in 1941 to 14 p.c. compared with 1940.

Bank Debits at the Clearing-House Centres, by Economic Areas, 1937–41

Economic Area	1937	1938	1939	1940	1941
	$	$	$	$	$
Maritime Provinces	733,359,446	639,682,953	679,947,972	824,489,836	940,712,152
Quebec	11,568,421,542	9,965,182,391	9,820,399,452	9,973,060,607	11,068,666,580
Ontario	15,939,149,497	13,810,063,008	13,618,490,448	15,384,403,480	18,214,788,841
Prairie Provinces	4,827,021,407	4,572,383,521	5,478,229,879	6,118,407,201	6,591,645,027
British Columbia	2,098,109,246	1,937,050,859	2,020,284,080	2,137,113,355	2,427,144,584
Totals	**35,166,061,138**	**30,924,362,732**	**31,617,351,831**	**34,437,474,479**	**39,242,957,184**

Insurance

Life Insurance.—The life insurance business was introduced into Canada by companies from the British Isles and the United States of America about the middle of the nineteenth century. By 1875 there were at least 26 companies, and possibly several more, competing for the available business in Canada, as against 40 active companies registered by the Dominion and a few provincial companies in 1941. Of the 40 active companies registered by the Dominion, 28 were Canadian, 3 British, and 9 foreign.

As a result of the adaptation of life insurance policies to the needs of the public, and of the growing wealth of the country, the increase in the amount of life insurance in force has been remarkable. In 1869 the total life insurance in force in Canada, by Dominion registered companies, was only $35,680,000 as compared with approximately $7,349,000,000 at the end of 1941. This latter figure was equal to $643·52 per head of population. In addition, there was $183,000,000 of fraternal insurance in force by Dominion licensees and $164,000,000 of insurance in force by provincial licensees. Thus the total life insurance in force in the Dominion at the end of 1941 was approximately $7,696,000,000. The premium income from Canadian business of all Dominion registered companies (not including fraternal benefit societies) increased from $90,000,000 in 1920 to $221,000,000 in 1930, but decreased to $203,000,000 in 1941.

Head Office, Sun Life Assurance Company of Canada, Montreal.

Fire Insurance.—Fire insurance in Canada began with the establishment of agencies by British fire insurance companies. These agencies were usually situated in the seaports and operated by local merchants. The oldest existing agency of a British company is that of the Phœnix Fire Office of London, now the Phœnix Assurance Co., Ltd., which opened in Montreal in 1804.

The Halifax Fire Insurance Co. is the first purely Canadian company of which any record is obtainable. Founded in 1809 as the Nova Scotia Fire Association, it was chartered in 1819 and operated in the province of Nova Scotia until 1919, when it was granted a Dominion licence.

The report of the Superintendent of Insurance for the year ended Dec. 31, 1941, shows that at that date there were 270 fire insurance companies doing business in Canada under Dominion licences, of which 58 were Canadian, 72 were British, and 140 were foreign companies, whereas in 1875, the first year for which authentic records were collected by the Insurance Department, 27 companies operated in Canada—11 Canadian, 13 British, and 3 United States. The proportionate increase in the number of British and foreign companies from 59 to 80 p.c. of the total number is a very marked point of difference between fire and life insurance in Canada, the latter being carried on very largely by Canadian companies.

The enormous increase since 1869 (the earliest year for which statistics are available) in the fire insurance in force is due, no doubt, partly to the growth of the practice of insurance; but it is also important as an indication of the growth of the value of insurable property in the country, and thus throws light upon the

expansion of the national wealth of Canada. By 1880, companies with Dominion licences had fire insurance totalling $411,564,271; by 1900, the one-thousand-million-dollar mark had almost been reached, and by 1930, the total stood at $9,672,997,000. At the end of 1941, besides $11,383,392,645 of fire insurance in force in companies with Dominion licences, there was also $1,405,570,958 in force in companies with provincial licences, or about $12,788,963,603 in force with companies, associations, or underwriters licensed to transact business in Canada.

Miscellaneous Insurance.—Miscellaneous insurance now includes among other classes in Canada: accident (including personal accident and employers' and public liability); sickness; aircraft; earthquake; automobile; burglary; explosion; forgery; credit; guarantee; hail; inland transportation; live stock; machinery; personal property; plate glass; property; sprinkler-leakage; boiler; title; weather insurance; etc. Whereas, in 1880, 18 companies were licensed for such insurance, in 1941 there were 269 companies, of which 60 were Canadian, 72 British and 137 foreign.

The total net premium income for 1941 was $42,399,582 and the most important class of miscellaneous insurance, according to the amount of premiums received, was automobile insurance, which has greatly increased during the past twenty-one years; although decreases were shown for a few years prior to 1935, there has been an increase each year from 1935 to 1941. As recently as 1910, the premium income of companies doing an automobile insurance business was only $80,466; in 1916 it was $909,503 and in 1941, $23,465,771. The premium income of combined accident and sickness insurance came second with $4,538,021. Personal accident insurance was third in 1941 with $3,256,627. The premium income of all accident and sickness insurance combined totalled $13,517,286.

Canadian Government Annuities.—The Government Annuities Act authorizes the issue of Government annuities in order to encourage the people of Canada to provide, during the earning period of their lives, for old age. A Canadian Government annuity is a yearly income of from $10 to $1,200, either payable for life, or guaranteed for 10, 15 or 20 years and payable for life thereafter. Annuities may be either deferred or immediate, and may be purchased individually or by associated groups operating under retirement plans.

From the inception of the Act until Mar. 31, 1942, the total number of individual annuity contracts, and certificates under group contracts issued was 80,742; of these, 11,180 were group certificates issued under group contracts. The net receipts for the entire period totalled $191,734,320.

On Mar. 31, 1942, there were in effect 73,347 contracts and certificates. Annuity was payable under 24,546 of these and annuity was still deferred under 48,801. The total amount of annuity payable under the vested contracts was $9,768,155 and the value of outstanding annuities was $172,911,035.

Loan and Trust Companies

The principal function of loan companies is the lending of funds on first mortgages on real estate, the money thus made available for development purposes being secured mainly by the sale of debentures to the investing public and by savings department deposits. Of the loan companies under provincial charters, the majority operate largely in the more prosperous farming communities.

The number of loan and savings societies in operation and making returns to the Government at Confederation was 19, with an aggregate paid-up capital of $2,110,403 and deposits of $577,299. In 1941 there were 41 loan companies that reported, with a paid-up capital of $36,150,684 (Dominion companies $19,082,481 and provincial companies $17,068,203).

The reserve funds of all real-estate-mortgage loan companies at the end of 1941 was $23,116,917 (Dominion companies $13,752,103 and provincial companies $9,364,814); liabilities to the public $127,226,354 (Dominion companies $96,743,884, and provincial companies $30,482,470); and liabilities to shareholders $61,742,674 (Dominion companies $34,043,232, and provincial companies $27,699,442).

Trust companies act as executors, trustees, and administrators under wills or, by appointment, as trustees under marriage or other settlements, as agents or attorneys in the management of the estates of the living, as guardians of minors or incapable persons, as financial agents for municipalities and companies and, where so appointed, as authorized trustees in bankruptcy.

The aggregate total assets of the trust companies of Canada at the end of 1941 were $2,913,792,680 as compared with $805,000,000 in 1922 (the earliest year for which figures are available. The bulk of these assets ($2,687,547,365 in 1941) was represented by estates, trusts and agency funds. The assets of Dominion companies in 1941 amounted to $327,764,160 and of provincial companies to $2,586,028,520.

Small Loans Companies and Money-Lenders

The small loans companies, 3 in number and incorporated in recent years by the Parliament of Canada, make small loans of $500 or less on the promissory notes of borrowers, additionally secured, in most cases, by endorsements or chattel mortgagas. Such companies, at the end of 1941, had an aggregate paid-up capital of $1,234,250; reserve funds, $517,986; borrowed money, $4,258,853; other liabilities, $1,858,834; small loans made, $15,233,982; small loan balances, $7,557,414.

On Jan. 1, 1940, the Small Loans Act, 1939 (c. 23, 3 George VI) passed by the Parliament of Canada, came into force under which licensed money-lenders making personal loans of $500 or less are limited to a rate of cost of loan of 2 p.c. per month on outstanding balances and unlicensed lenders to a rate of 12 p.c. per annum, including interest and charges of every description. As at Dec. 31, 1941, there were 69 licences issued under the Small Loans Act, 1939, of which 3 were issued to small loans companies and 66 to money-lenders. The 66 money-lenders made personal loans in 1941 of $8,062,099 and at the end of that year had outstanding small loans balances of $4,184,131.

CHAPTER XVII

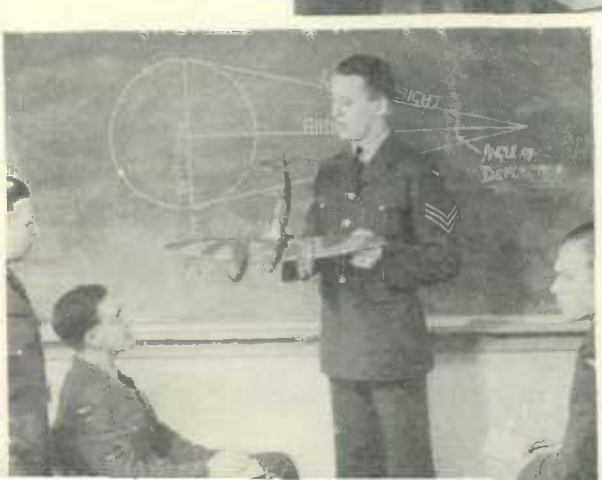
Education

Canada's constitution assigns public education, except in the case of the native Indian population, to the jurisdiction of the Provincial Governments. A system of public elementary and secondary education, financed mainly by local school authorities (of which there are about 23,500), but assisted by provincial grants, has developed in each province. Since 1913 the Dominion Government has provided certain grants to the provinces for education, first in aid of agricultural instruction, later technical education, and from 1937 to 1939 for the training of unemployed youth. Yet, in spite of provincial and Dominion assistance, more than 80 p.c. of the cost of running the schools is met by local school authorities, the source of revenue being taxation on real estate, almost entirely.

There are some private schools in all provinces, i.e., schools that are not conducted by publicly elected or publicly appointed boards, and not financed out of public money, but their enrolment amounts to only about 4 p.c. of the total. In the realm

Training Boys in Secondary Schools for War Work

Students making models to blueprint of actual combat aeroplanes for use in R.C.A.F. Schools.



An R.C.A.F. instructor using one of these models at an advanced air training school.

Photos by Malak, Ottawa

of higher education six provinces have each a provincially supported university, and the remaining three have each one or more colleges supported by provincial funds, but in most of them there is a considerable number of students in private, endowed, or denominational colleges.

The Man-power Problem and the Schools

Canada's man-power problem of 1942 has been felt in the schools. Enlistments and voluntary transfers to other pursuits that were more remunerative, or that seemed more directly concerned with the war effort, have left the schools understaffed. Secondary schools reported an abnormal exodus of students before the end of the spring term and, in general, opened several weeks later than usual in the autumn to allow students to assist with the harvest. A greatly increased number of short, intensive technical courses has been added, to train or retrain personnel for the Armed Forces and industry.

To meet the teacher shortage the provinces have temporarily relaxed their requirements for diplomas, offered accelerated or short courses leading to interim certificates, and encouraged ex-teachers, especially married women, to return to their former work. School boards have in many cases offered higher salaries, and the average is up noticeably in most provinces. In spite of these measures, however, some rural schools were unable to open in September, 1942, or were obliged to engage teachers without professional training. The children in such cases will generally be assisted by the provincial correspondence schools.

The indiscriminate exodus of older pupils from the schools during the school year 1941-42 has given cause for official concern. Many of them accepted relatively unskilled work, whereas continuance in school for a limited period might have equipped them to make a more skilled contribution to the war effort and to insure their own future. It seems not unlikely that plans to control this movement may be introduced in the current year. Temporary employment at the beginning of the term, mainly on farms, has been provided for by varying regulations in the different provinces.

A review of War Emergency Training activities and the new Dominion "Act Respecting the Carrying on and Co-ordination of Vocational Training" is given in the chapter on Labour. This Act makes provision for implementing the Order in Council of October, 1941, relating to the training and re-establishment of service men in civilian life, as well as for more immediate projects concerned with the prosecution of the War. It provides for aid to be paid directly to individual students to enable them to attend established courses, as well as for aid to institutions in setting up or maintaining instructional programs. The work done under it is likely to go far to meet the need for specialized man-power.

Adaptation in Regular Courses.—Within the lower grades of the elementary school systems the main changes in curricula are an increased emphasis on the subject matter relating to religious instruction, health and nutrition, democratic citizenship and patriotism. Students of the upper elementary grades are given longer periods of instruction in matters relating to agriculture or to shop work, to make them more useful during summer holidays and in spare time throughout the year.

In the regular work of the secondary schools a definite attempt is made to train boys and girls for entrance into active war work. Projects of vocational courses within composite schools, or the more purely vocational schools, are often directly associated with some phase of the War. In several schools, for example, students

make model aeroplanes, to blueprints of actual combat 'planes, for use in Royal Canadian Air Force schools: others are taught the rudiments of metal work or woodwork in the school shops. Art classes include scale drawing and simple blueprint designs as an introduction to drafting; the mathematics, physics and chemistry courses are designed to prepare students for enlistment or to enter essential war industry. These branches of study have been included for many years in the courses of study, the only change being in the subject matter chosen or the projects undertaken.

Cadet training is now common to most of the larger secondary schools and, through summer camps, is being linked more closely with the national defence organization. It tends to be integrated more closely with regular school work by classroom instruction in problems specifically related to the Armed Forces.

First aid, air-raid precaution, salvage campaigns and community war work are closely linked with the regular work of the schools. The need for rubber or metal salvage, for instance, arouses special interest in the origin and processing of these commodities, on which the alert teacher capitalizes in her daily work. War charities or war savings campaigns provide real experience for the pupils in organizing for community service. It is a commentary on the effectiveness of pupils' work that the highest per capita contribution of any Canadian community to last year's Red Cross campaign came from a small Alberta village where the collection was in charge of the local school.

Buildings and Equipment.—Provinces and school boards have placed buildings and facilities for training at the disposal of the Dominion Government. This is particularly true of the vocational schools and the science departments of the universities. Training courses are arranged when necessary to dovetail in the matter of hours with the regular day courses, and classes at night keep technical school classrooms and laboratories in constant use. Numerous gymnasia, university residences, and many other college and school buildings have been relinquished for the duration of the War to provide accommodation for the training of members of the Armed Forces.

In spite of adjustments, university institutions have all continued in operation. Total enrolment has in fact been relatively little affected, although a shift in emphasis has been noticeable from the more academic to more technical or "practical" courses.

Girls Taking Instruction in Assembling an Altometer Used in Aeronautics.—Girls are replacing men in many vocations and are showing particular skill in assembling and adjusting mechanical instruments.

Photo by Malak, Ottawa

A trainee being instructed in the use of a jeweller's lathe and the machining of fine parts for aircraft instruments.

Maintenance of university enrolment at near peace-time levels has been made possible because students have been enabled to take their basic military training while in attendance. Special plans have been sponsored by the Dominion Government for stimulating attendance and accelerating courses in Applied Science, Engineering, Medicine and Dentistry, all of which has meant adjustment in the matter of building accommodation and equipment.

Financial Support for Schools.—In spite of the many new demands on public money, financial support for schools in 1940 and 1941 was maintained at a higher level than in the years immediately preceding. The same was probably true in 1942.

Although cost-of-living bonuses are not mandatory for school boards, as in the case of private employers, there have been, in numerous cities, upward adjustments in salary scales during the past year or two. In rural areas, where the turnover of teachers is rapid, school boards have commonly found it necessary to offer higher salaries in order to effect replacements.

Great variations in expenditure, per pupil or per capita, persist as between different parts of the country. To help overcome these differences, teachers' organizations urge that assistance to schools be provided according to varying needs by the Dominion Government. Present Dominion aid is on a fifty-fifty basis with all provinces.

Summary Statistics of Education in Canada, 1941

NOTE.—Figures in even hundreds are approximate only.

Type of School or Course	Institutions	Pupils	Teachers	Expenditure
	No.	No.	No.	$
Provincially Controlled Schools—				
Ordinary and technical day schools	32,800	2,082,487	76,350	
Evening schools	431	93,944	2,525	
Correspondence courses	8	23,568	350	129,000,000
Special schools	20	5,088	500	
Normal schools	81	6,468	882	
Privately Controlled Schools—				
Ordinary day schools	853	89,798	4,976	5,600,000
Business training schools	184	19,356	656	
Dominion Indian Schools	370	17,425	580	1,908,274
Universities and Colleges—				
Preparatory courses	60[1]	19,885	1,369	
Courses of university standard	155	48,835	5,198	21,000,000
Other courses at university	10[1]	40,674		
Totals	**35,000**	**2,447,528**	**93,000**	**156,500,000**

[1] Includes only affiliated schools that are not enumerated in "Courses of university standard".

Stature of Canadian Children.—The health teaching that has been emphasized in schools during recent years appears to be contributing to a considerable increase in the stature of Canadian children. Recent measurements of 80,000 children in Toronto schools, compared with similar measurements in 1923, show that children of ages 7 to 13 years now average from one to two inches taller. Five-year-olds are more than one-half inch taller; fourteen-year-olds are taller now than fifteen-year-olds were then. Corresponding increases are shown in weight.

These records indicate that Canadian children are considerably taller and heavier than English or Scottish and slightly above those United States children that have been measured in recent surveys. There are probably few countries engaged in the present war where conditions have affected as little the health and growth of children as in Canada, thanks to freedom from enemy occupancy or attack, and the relatively abundant food supplies that have been available.

Libraries and the War.—Like the schools, Canadian libraries have been called upon to make an important contribution in the prosecution of a war requiring so much technical and scientific knowledge. They have been a public expression, too, of confidence in the only democratic way of forming opinion—free access to all the facts and all shades of opinion—and their contribution to the building and maintenance of morale has undoubtedly been an important one. Public libraries in 1942 generally reported a greatly increased demand for books on current affairs, modern history, world problems, and the like, as well as on scientific and technical subjects.

The total amount of borrowing from public libraries has declined somewhat, although this cannot be considered surprising. People on the whole have less time for reading and, perhaps more significantly, more than half a million men are in the Armed Forces and largely out of reach of established library service. Librarians in Canada have not, up to the present, been called upon, or supplied with funds, to provide facilities for the Armed Forces in the way that they have in the United States.

A significant development in 1941-42 was the formation of a Canadian Library Council, a body representative of the several provincial library associations, which is rapidly gaining recognition as the voice of Canadian librarianship.

A New Canadian Industry. — In the workshops and laboratories of the Government-owned Research Enterprises Ltd., Toronto, optical glass is melted, ground, polished and incorporated in Canadian-made optical instruments such as range finders, gun sights and periscopes.

Courtesy, Wartime Information

A Glimpse of the Rugged Coast of Cape Breton Highlands National Park, Nova Scotia.

Courtesy, National Parks Bureau of Canada

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