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DEPARTMENT OF  
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CANADA

# A FACT A DAY ABOUT CANADA

FROM THE

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# C O N T E N T S

No. 1	Canada's Water Power	No. 16	Inventions Which Assisted Dairying
No. 2	Growth of Water-Power Development	No. 17	Cheese
No. 3	Central Electric Stations	No. 18	Varieties of Cheese Produced
No. 4	Smelts	No. 19	Cheese Factories
No. 5	Live Stock	No. 20	Export Trade in Cheese
No. 6	Fibre Flax	No. 21	Butter
No. 7	Estimates of Production of Field Crops	No. 22	Butter Production in Creameries
No. 8	Seed Potatoes	No. 23	Dairy Butter
No. 9	Export Markets for Seed Potatoes	No. 24	Concentrated Milk and Ice Cream
No. 10	Garden Vegetables and Field Root Seeds	No. 25	Production and Utilization of Milk
No. 11	Hay and Pasture Seeds	No. 26	Canadian Milling Industry
No. 12	Supplies of Field Root and Vegetable Seeds	No. 27	Canadian Vocational Training
No. 13	Milk	No. 28	Conservation of Farm Machinery
No. 14	Introduction of Dairy Cattle Into Canada	No. 29	Atlantic Salmon
No. 15	Development of Canadian Dairying	No. 30	Canadian Farmers Have Fine Record
		No. 31	Canada's Merchant Fleet Grows

No. 1. Sun. Oct. 1, 1944 -- Canada's Water Power

Canada's basic geological formations and their super-imposed topographical features have resulted in a fresh-water area officially estimated at 228,307 square miles. This is larger than the fresh-water area of any other country and more than double that of the whole land area of Great Britain and Ireland.

As all of this fresh-water area is above sea-level, and much of it at considerable altitudes, its outflow descending to the sea creates sources of potential energy at every rapid and fall along its course. By what may be regarded as a special dispensation of nature, more than half of this potential power occurs in that section of Canada, comprising the Provinces of Ontario and Quebec, which is without commercial fuel deposits and in which is concentrated approximately 85 per cent of the industrial development of the Dominion.

In war as in peace, water power is the mainspring of Canada's industrial success. The products of Canada's war industry, the output of which was designed to reach a peak value of \$3,700,000,000 during 1943 and, which is so great that only 30 per cent is allocated to the Canadian Armed Forces at home and abroad, have been used in every battle since Dunkirk -- in the Phillippines, in Greece, Crete, Russia, China, North Africa and the Middle East.

The production of the essential constituents of these munitions -- aluminum, copper, steel, zinc, nickel, lead and chemicals -- and the conversion of these and many other materials into implements of warfare, are powered almost entirely by hydro-electricity generated by Canada's abundant and strategically located water powers.

The peace-time utilization of these water powers have enabled Canada to advance from an agricultural economy to that of the third greatest manufacturing country in the British Empire and provided, upon the outbreak of hostilities, a reserve of power and an industrial background for the rapid development of a great munitions' industry.

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No. 2. Mon. Oct. 2, 1944 -- Growth of Water-Power Development

The inception of long-distance transmission of electricity about the beginning of the present century has meant much to Canada. It has made practicable the development of water-power sites remote from the point at which the power was to be used with the result that hydro-electric central station installation has increased from 33½ per cent of the total hydraulic installation at the beginning of January in 1900 to 90 per cent at January 1, 1944.

Besides the increase in power resulting from the addition of generating equipment to plants not completely installed, and the building of new generating stations, much additional power was provided by greater diversion of water at Niagara Falls, by the continuance of daylight saving throughout the winter months, by the transference of secondary power to primary uses and by many other methods.

The outstanding development of the year was the completion, in the Province of Quebec, of the great Shipshaw power station of the Aluminum Power Company where turbines of a total preliminary rating of 1,020,000 horse power were installed with the final tests being expected to show a considerably higher rating. The installation of this plant is almost double that of the next largest Canadian development



and, in conjunction with the other Saguenay River developments of the Aluminum Power Company and the Saguenay Power Company, provides power for the immense aluminum industry at Arvida.

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No. 3. Tues. Oct. 3, 1944 -- Central Electric Stations

Central electric stations are companies, municipalities or individuals selling or distributing electric energy, whether generated by themselves or purchased for resale. Stations are divided into two classes according to ownership: commercial -- those privately owned and operated by companies or individuals; and municipal -- those owned and operated by municipal or provincial governments. These are subdivided according to the kind of power used into hydraulic, fuel, and non-generating.

The last named sub-class purchases practically all the power it resells; a few of these stations have generating equipment that is held for emergencies. The hydraulic stations contain water turbines and wheels with around 88 per cent of the total capacity of hydraulic installations in all industries in Canada and the generators driven by this hydraulic equipment generate 98 per cent of the total output of all central electric stations.

The growth of the central electric stations' industry, has been almost continuous since 1919, when statistics of kilowatt hours generated were first made available. The depression that occurred in the early 1930's resulted in decreased output of power for several years but it soon recovered, the increases in 1940 and 1941 being particularly large, owing to the effect of the War on production.

The central electric stations' industry is one that is particularly suited to large-scale operations, because of the huge outlays of capital necessary. Capital invested and total horse-power installed increased almost continuously even during the depression years, mainly because large power projects, planned before the depression, were in process of construction during the early years of the past decade. Off-peak and surplus power, used mainly in the electric boilers of pulp and paper plants, grew steadily to a peak of 7,803,000,000 kilowatt hours in 1937, but owing to war requirements for firm power it was reduced in 1940-43, and amounted to only 3,229,426,000 kilowatt hours in 1943.

Although the amount of power used by domestic customers or for residential purposes has been between only four and six per cent of the total production of central electric stations, this service is exceedingly important.

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No. 4. Wed. Oct. 4, 1944 -- Smelts

Basis of a fishery of considerable importance in Canada's eastern provinces, the American or Atlantic smelt is an excellent small pan fish of fine flavour. Its coastwise distribution in the sea is from Labrador to Virginia but the smelt goes into freshwater streams to spawn. As a general thing not over 10 inches in length, and very often measuring considerably less than that, the American smelt is silvery in the colouring of the sides of its body and greenish above, with the body and fins marked with fine dark spots. Somewhat similar species occur in British Columbia waters, with the Pacific smelt the most important. Unlike the Atlantic smelt, however, the Pacific smelt is a sea spawner, olivaceous in colour with silvery sides, and translucent in appearance. Smelt catch on the Pacific coast is only small, however, as compared with Atlantic landings.

Fishermen of the Atlantic provinces take smelts on many different sections of the Maritime province and Quebec coasts but the northeastern area of New Brunswick yields by far the biggest part of the catch. The average annual total catch of Atlantic smelts in the three years 1940 to 1942 was about 7,600,000 pounds.

All save a relatively small part of the Atlantic catch of smelts is taken by fishing done through the ice of estuaries and bays during winter months. Box nets, bag nets and gill nets are used, although there is also some hook and line fishing. Box nets are little used except in northeastern New Brunswick but they land most of the catch in that area, which, as already noted, is much the most important smelt fishing section of the Atlantic Coast. Bag nets are used chiefly in Northumberland Strait and around Prince Edward Island generally. In the Magdalen Islands gill nets take all of the catch and they are also important gear in Cape Breton and some other parts of the Nova Scotia coast.

Some of the fish are marketed fresh as "chilled" smelts but by far the greater part of the catch is sold "frozen in the round"; that is, as frozen whole fish. In the past year or two some have been marketed "dressed" or, in other words, with heads and entrails removed.

The greater part of Canada's catch of Atlantic smelts is marketed in the United States, where the fish are in brisk demand. There is also a substantial sale within the Dominion.

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#### No. 5. Thurs. Oct. 5, 1944 -- Live Stock

There were 10,346,800 head of cattle on farms in Canada at the beginning of June this year, more than ever before. The 1944 total is a seven per cent increase over 1943. Numbers of sheep on farms, also show an eight per cent increase, the total being 3,726,000. Horses at 2,735,000 were down 40,000 from the year before. Hogs on farms totalled 7,741,000, a decrease of five per cent. Hens and chickens at 86,792,000 were up 16 per cent above the previous year.

Commenting on the agricultural situation in Europe, the Current Review on Agricultural Conditions in Canada says that as regards live stock and its products, forced slaughterings became necessary during early war years in order to reduce live stock numbers to the level of available feed supplies. By 1943, however, adjustments in European feed production have enabled a return to higher numbers, and this trend was further continued in 1944. Thus for instance, hog numbers in Denmark returned to 2,291,000 head by 1944, after having fallen to 1,267,000 in 1942. During 1937-38, they numbered 2,705,000. Cattle numbers in the same country also advanced from 2,324,000 in 1943 to 3,033,000 head in 1944, that is, to within two per cent of the average for the ten years 1928-37.

In Germany and the Danube basin, live stock production is reported to be in excess of pre-war levels. On the other hand, a serious deterioration was observed in Ireland, as well as most of Western and Southern Europe, that is, in countries usually deficient in feed. Considering Europe as a whole, authoritative sources placed live stock numbers in Continental Europe, as of 1943, at 10 per cent below 1939 in the case of cattle, about 30 per cent for hogs, and an even larger percentage for poultry. The numbers of sheep may have increased.

The situation is not so favourable in European Russia, part of which has recently been liberated from enemy occupation. Here, only one-quarter of pre-war



herds was left when the enemy withdrew. But large numbers were evacuated before the Nazis moved in and these animals are now being returned. In addition, collective and state farms in territories spared from invasion are supplying most of the foundation stock required for a quick return to normal numbers.

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No. 6. Fri. Oct. 6, 1944 -- Fibre Flax

Commercial production of fibre flax in Canada in 1944 covers about 40,000 acres and has an estimated value of four million dollars, says the Dominion Department of Agriculture.

Most of this fibre goes to Britain where it is spun into thread and yarn for the manufacture of parachute cords, collision mats, coverings for guns and airplanes, and other essential products. Even the comparatively small amount remaining in Canada has its manufacture restricted to wartime uses.

When war ends, the needs of civilians, unfilled for many wartime years, will, it is expected, create a new demand for fibre flax. But in attempting to meet this demand, the Canadian producer will be obliged to compete with the anticipated lower prices of producers in other countries. He must be prepared both to lower his production cost and to raise the quality of his product.

In the meantime, the Canadian producer is protected by the Government which buys his entire acceptable output and which has an assured market for a short time after the end of the war.

In achieving their present output of fibre flax, Canadian producers have been guided and helped by the work carried on by the Dominion Experimental Farms. This work has contributed to increased yields and improved quality of the product.

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No. 7. Sat. Oct. 7, 1944 -- Estimate of Production of Field Crops

Canada's 1944 potato crop is placed at 47,540,000 cwt. compared with 43,541,000 cwt. in 1943. In the Maritimes, both Prince Edward Island and Nova Scotia increased their production, largely as a result of much higher yields, although acreage planted to potatoes in Nova Scotia also increased. A reduction in yield per acre in New Brunswick resulted in a smaller production despite a planted acreage which exceeded that of 1943 by about 10 per cent. Production in Quebec is up while the Ontario crop is about the same as last year. Flooded conditions together with late blight and rot in Manitoba nearly halved production, while the Saskatchewan crop is larger than in 1943. Alberta shows little change but the outturn in British Columbia is down.

The production of sugar beets in 1944 was increased to 608,000 tons from the 1943 outturn of 473,300 tons. The province of Quebec shows a commercial production for the first time, amounting to 55,000 tons. Ontario's acreage and output for 1944 are sharply up as compared with 1943, while Alberta has produced a moderate increase. A reduced acreage in Manitoba has been more than sufficient to offset a higher yield per acre.

Despite a reduced acreage sown to dry peas in 1944 as compared with 1943, production has declined by less than 75,000 bushels as a result of very good yields.

The total Canadian production in 1944 was 1,488,000 bushels compared with 1,562,000 in 1943. Actually the decline may be considerably less than that because some peas for canning and for feed were included in the estimate of production for Ontario in 1943. Quebec and Manitoba both report greater production with Manitoba's 1944 crop more than double that of the preceding year. Alberta's production is down as a result of reduced acreage although the crop has also been injured recently by hail and heavy winds. The pea acreage in Saskatchewan is increasing and the output is estimated at 60,000 bushels for this year.

The shelled corn crop is up to 12,390,000 bushels in 1944 as compared with 7,775,000 bushels in 1943. More favourable weather in Ontario this year is responsible for both a larger acreage and a higher yield per acre. Production in Manitoba is higher than last year by virtue of a much better average yield and in spite of a reduced acreage. The turnip, alfalfa and fodder corn crops show little change from a year ago, but the outturn of mixed grains is half as high again as in 1943.

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#### No. 8. Sun. Oct. 8, 1944 -- Seed Potatoes

The history of seed-potato certification is the history of seed-potato production in Canada. The growing of potatoes specially for seed is a development of the past thirty years and is the outcome of an effort on the part of the United States Government to prevent the spread of powdery scab to that country.

In 1914 the United States, which was one of the chief markets for our potatoes, placed an embargo on potatoes from all countries to prevent the importation of this disease. This meant that many growers in the United States were cut off from the Canadian supplies of their seed. At the same time the embargo caused considerable hardship for Canadian growers who had organized their activities with the export market in view.

Under a special arrangement between the two countries, the United States authorities agreed to allow shipments to enter from Canada as long as no powdery scab was found. To ensure that clean potatoes were sent forward, the Division of Botany at Ottawa undertook to inspect the potatoes to be shipped from the Maritime Provinces.

Some time later powdery scab was discovered in the United States and the embargo was lifted. In the interval, however, the improvement in the quality of the seed brought about by the careful inspection, necessary to meet the United States regulations, had increased the popularity of the Maritime potatoes. The advisability of expanding the volume available for seed as rapidly as possible and yet maintaining or improving the quality at the same time was recognized by the Federal authorities.

As a first step in bringing this about, field surveys were organized to determine the quality of the existing seed stock. It was found that almost all fields visited in the Maritimes were affected by disease in varying degrees. Leaf roll, Mosaic and other virus diseases, which soon reduced yields to such an extent that the continued use of affected potatoes for seed becomes unprofitable, were very common. It was found, also, that few of the existing fields were of one variety.

The first step in the improvement program was to select the best fields and these were made the source of the foundation stock from which better seed was to be grown. Potatoes grown from this seed and found on inspection to meet the requirements were certified. The requirements for certification were set very low,



judging by present-day standards. This was done to ensure that a sufficiently large volume of seed would be available for increasing the acreage of this improved seed as rapidly as possible. A tolerance of 12 per cent of virus diseases and a five per cent mixture of varieties was permitted.

In the course of the years that followed, the method used by the inspection staff gradually improved the quality of the crop and the regulations were stiffened in accordance with the improvement shown. At the present time, the standard permits a tolerance of only three per cent of all diseases combined and does not allow any varietal mixture.

At the outset only potatoes grown in the Maritime Provinces were covered by the inspection service. In 1919, however, Ontario and Quebec were included in the inspected area and in the following year the service was extended to the rest of Canada.

Until the year 1920 the sale of seed had been confined to the Maritime Provinces where the acreage was rapidly increasing. In that year a large volume was available for domestic trade and, in addition, approximately 56,000 bushels were exported. The demand was so great that by 1924 shipments of certified seed totalled 334,484 bushels. Since then the trend in shipments has been generally upwards, although there has been wide fluctuation from year to year. Since 1937, with one exception, shipments each year have been in excess of 2,000,000 bushels and reached an all-time high of 2,903,909 in 1939.

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#### No. 9. Mon. Oct. 9, 1944 -- Export Markets for Seed Potatoes

As stated in the preceding item, the largest export market for Canadian seed potatoes is in the United States and, until quite recently, the Maritime Provinces have been the chief suppliers. The greatest demand is for Irish Cobblers and Green Mountains, although Bliss Triumph has also been quite popular. Within the past few years a brisk trade has developed along the west coast of the United States where Netted Gem and White Rose from British Columbia are in demand.

Cuba has also been a large buyer of Canadian potatoes. Some years ago exports to that country were interrupted because the Cuban authorities felt that efforts should be made to raise their own supplies and thus be independent of foreign sources. It was found however, that Cuban seed had deteriorated to such an extent after a short time that it was useless and it was necessary to again turn to Canada for annual seed supplies. The variety most popular with Cuban growers is Bliss Triumph.

An attempt to establish an outlet in the Argentine was made in the year 1928-29, when a large number of sample shipments were made by the Dominion Government. Little immediate success was achieved as the Argentine was itself an exporter of seed potatoes. In 1935-36, however, a crop failure in the Argentine necessitated the purchase of a large volume of both seed and table stock, and in that year Canada shipped sizeable quantities. Exports to the Argentine reached their peak in 1937 when over a million bushels were shipped. While this trade was not maintained at the 1937 level, a considerable volume moved during the next three years. With the outbreak of war, exports dwindled until in 1942 the movement stopped altogether.

Uruguay has also been a fairly large importer of Canadian seed. Buyers from this country prefer a rather recent introduction known as Katahdin. Venezuela,



on the other hand, prefers Bliss Triumph. A fairly active trade has been established with many countries of the Western Hemisphere, but this trade has been somewhat interrupted by the shipping difficulties brought about by the war. A trade of moderate volume was established with South Africa before the war but here again lack of shipping space has cut off exports in recent years.

Until 1926 potatoes were shipped in some volume to the United Kingdom. This trade was stopped, however, when the British authorities placed an embargo on the importation of potatoes from certain countries, including Canada, to prevent the introduction of the Colorado potato beetle to that country. The subject of re-establishing this trade was discussed at the Imperial Economic Conference at Ottawa in 1932, but the United Kingdom officials refused to relax the regulations.

Attempts have been made to expand exports farther afield and trial shipments have gone to Palestine, China, Honolulu, Java, and Egypt. Up to the present, no permanent trade with these countries has been established.

The limiting factor in the expansion of the certified seed potato industry is now not one of supply but of markets. A study of production statistics indicates that every year considerably more potatoes are certified than are sold for seed either in Canada or on the export market. It would seem likely that, with the cessation of hostilities in Europe, there would be an active demand for a considerable volume of good seed to build up European supplies as rapidly as possible. This market, however, may be of a temporary nature and would exist only as long as the European countries are unable to supply their own needs.

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#### No. 10. Tues. Oct. 10, 1944 -- Garden Vegetable and Field Root Seeds

The garden vegetable and field root seed industry has had a phenomenal growth during the past five years, which is directly attributable to the present world conflict. Prior to 1939 a few growers, chiefly located in British Columbia, had been struggling to develop an interest in Canadian-grown seed, but with indifferent results.

Going back over the history of the industry, we find that for more than twenty-five years it had been known that soil and climatic conditions in British Columbia were admirably suited to the production of a large variety of vegetable seeds. Encouragement had been given to a few enterprising growers by the Provincial and Federal authorities, who recognized the desirability of having seed especially adapted to Canadian conditions.

For quite a number of years the experimental farms and agricultural colleges throughout the Dominion had been developing special strains of certified vegetable and field root seeds that were particularly suited to Canada. This "elite" seed was distributed to growers who in turn produced "certified" and "registered" seed from it. It was generally felt that more progress could be made in a highly competitive business by offering seed that was certified pure as to type and of guaranteed germination, than by attempting to compete with the commercial grades of seed that could be grown more cheaply in other countries.

At the outbreak of war the Canadian authorities agreed to supply the United Kingdom with certain kinds of seed that normally were purchased on the European Continent. The Federal Government, in conjunction with the Provincial Governments, undertook to put into operation a program designed to produce this seed as expeditiously as possible. Growers who signified their desire to cooperate

were provided with "elite" stock seed, from which they were to produce certified seed with the understanding that their output would be made available to the Dominion, which in turn would deliver to the United Kingdom.

There was an immediate response right across Canada and growers in all provinces signified their desire to participate. It was natural, with the advantages of soil and climate, that British Columbia growers should be in the vanguard. Some conception of the rapidity of the increase in the number of growers during the early years of the war will be gained when it is noted that in 1938 there were only 16 growers in British Columbia, while by 1941 the number had risen to 200. This is particularly surprising when the very specialized nature of this business is considered.

Annual exports have increased very rapidly since the inception of this program. During the last crop year 3,009,438 pounds were shipped out of the country. The greatest volume of seed naturally went to the United Kingdom, but sizeable shipments were also made to the U.S.S.R., and smaller lots moved to such widely separated places as Guatemala, Newfoundland, Iraq and Mexico.

It is difficult to foresee the future of the export trade once European growers again get into production. It is hoped, however, that at least some part of this trade will continue after the war. It would seem reasonable to expect that the improved crops, resulting from the use of this seed might produce a continued demand from the British growers at least. Price will play an important part in determining the source from which the British buy seed and if Canada can sell at levels comparable to those of other countries, the bonus of quality might divert the trade in Canada's direction.

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No. 11. Wed. Oct. 11, 1944 -- Hay and Pasture Seeds

The earliest reference to the quantity of clover and grass seed produced in Canada is to be found in the Census records for the year 1851. No mention of kinds was made, but the total quantity produced in Upper Canada (Ontario) was 39,029 bushels and in Lower Canada (Quebec) 18,873 bushels. In 1861 the records were more complete, and in that year production was shown as follows: Upper Canada, 61,820 bushels; Lower Canada, 33,954 bushels; New Brunswick, 7,660 bushels; and Nova Scotia, 9,882 bushels.

Until the 1930's Eastern Canada produced the bulk of the seed. A gradual shift westward in the producing area began in the 1920's and since 1937 the greatest quantities have been harvested in the Western Provinces. The shift of the sweet clover and alfalfa acreage from Ontario to the Prairie Provinces was partly responsible, but the increasing popularity in the West of brome grass and crested wheat grass, which now make up a large portion of the total production, has been a contributing factor.

Exports of hay and pasture seeds were made as early as 1868, although hay and pasture seeds were lumped together with all other kinds of seed in the early records. It was not until 1889 that the classification "clover seed" was made in the trade statistics. Grass seed, however, was thrown into this classification, so that exports actually were clover and grass seed combined. During the year 1895 exports of these seeds were shown separately in the trade records. In that year, 141,124 bushels of clover seed and 23,544 bushels of grass seed moved out of the country.



Our chief customers are the United States and the United Kingdom, although small shipments have been made as well to several other countries. It is interesting to note that some markets will take seed that do not meet Canadian grade regulations and, therefore, cannot be sold in Canada. This seed would mean a loss to the grower if an export market could not be found. An example of this is the acceptance by the United Kingdom of alsike clover with trifoil in it.

Production of a great many of these seeds is influenced to a considerable extent by the abundance of hay. In years of short hay crops the acreage left for seed is much smaller than in years when plentiful supplies are available. This means that there are wide fluctuations in the quantities of seed exported from year to year, and no trend in this trade is apparent.

Under wartime conditions a further factor has been the control of exports exercised by the Special Products Board. This Board regulates the kinds and quantities of seed that may be exported so that a sufficient volume will be retained for Canadian requirements. At present Canadian alfalfa and clover seed supplies are limited and exports of these seeds are, therefore, under close regulation.

With the freeing of Europe it is to be expected that there will be a demand for Canadian seed, but with the exception of timothy, brome grass, crested wheat grass and sweet clover, which are normally produced in excess of domestic requirements, little or none will be available for export to Europe.

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#### No. 12. Thurs. Oct. 12, 1944 -- Supplies of Field Root and Vegetable Seeds

There need be no concern about a plentiful supply for 1945 of most of the field root and vegetable seeds, the Dominion Department of Agriculture states. Conditions this year have been excellent for the harvesting of the greater part of the seed crop. Preliminary estimates of Canadian grown seeds disclose that this year there has been a notable increase in the production of most of the kinds of the more widely grown field roots and vegetables.

The 1944 output of bean seed is placed at about 1,000,000 pounds, an increase of approximately 400,000 pounds over 1943. Production of beet seed this year is 80,000 pounds compared with 34,000 pounds last year. Carrot seed at 275,000 pounds is up 187,360 pounds; onion seed at 266,000 pounds shows an advance of about 16,000 pounds; radish seed output is estimated at 275,000 pounds, an increase of 55,000 pounds; spinach at 61,000 pounds is up about 80 per cent; squash and marrow at 18,500 pounds is up 100 per cent; mangel and swedes at 317,800 and 177,000 pounds show an increase of 74 and 112 per cent, respectively. There are sufficient of all the other kinds of seed to meet normal needs next year.

Production of alfalfa and sweet clover seeds in 1944 are substantially higher than in 1943. Alsike clover seed this year is only slightly more than 25 per cent of last year's crop. The output of red clover, brome and other grass seeds may be down this year in comparison with a year ago.

Since the war began vegetable seed production in Canada has become a relatively important industry. It has been assisted by the Agriculture Department. Prior to 1939 most of the field root and vegetable seeds used in Canada were imported from European countries, but when those countries were occupied by Germany, home production became a necessity. Now Canadian grown seeds are of even a higher quality than those which were grown in Europe and are produced in sufficient quantities to meet the domestic needs.

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No. 13. Fri. Oct. 13, 1944 -- Milk

The use of milk as an article of diet dates back to the dawn of civilization. Many references are made to milk in the New Testament, and it appears that both goats and cows provided this important food product. Early writings also refer to the use of milk by the Egyptians, Greeks and Romans. Even before the Christian era, ladies of the court found milk of value in preserving their complexions, although it is only in recent years that milk has been widely used in manufacturing. This development followed the invention of drying processes, whereby the solids from milk are used for this purpose after the fat has been removed.

In giving consideration to the origin of dairying, it is necessary to deal briefly with the dairy cow, which has been developed through centuries of selection and breeding. Very little is known about the cows referred to in the early scriptural writings, and it would appear that those reared by the Egyptians were bred for draft purposes as well as for milk production. Oxen, of course, are still used for farm work in many of the older countries of the world, and have been employed to no small extent in the frontier settlements of Canada and the United States.

Brittany and the Low Countries of Europe have provided foundation stock for many of the dairy breeds. Those of British origin can be traced back to the wild white cattle of early Britain. The line of descent is a little obscure, but it is evident that a kinship exists. On the Hamilton estate near Glasgow, well known since the flight of Ness from Germany, a small herd of wild white cattle have been kept for many years. These animals are small, about the size of Jerseys, definitely white in colour, and have ferocious characteristics, which offer little opportunity for a close acquaintanceship.

Among the dairy breeds that have become established in Canada, the following are mentioned in order of their numerical importance: the Holstein-Friesian, of Dutch origin; the Short-horn, one of the leading British breeds; the Ayrshire, bred in the hilly lands of southern Scotland; the Jersey, whose original home is in the Channel Islands; the French-Canadian; and finally the Guernsey, which like the Jersey, originated in the Channel Islands.

In the case of the Shorthorn, it is difficult to differentiate between cattle of dual-purpose breeding and those bred mainly for beef production. The former represents a very small proportion of the total, but the breed as a whole has contributed very largely to the dairy foundation stock of both Europe and America. Even the Aberdeen-Angus and Hereford breeds (though less suitable for milk production) has been used to some extent, and certainly added both size and substance to the dairy cattle population in this country.

No. 14. Sat. Oct. 14, 1944 -- Introduction of Dairy Cattle into Canada

The introduction of cattle into Canada followed closely in the path of immigration from France and Great Britain. Jacques Cartier brought a few cows with him on his third voyage. Champlain, in addition to providing brides for settlers, imported milk cows from France in 1610. It is an interesting fact that a dairy farm enterprise located a short distance below Quebec City, now operated as a semi-public undertaking, was established at the time the first herds were imported from France.

In Acadia, cattle were introduced in 1632. Actually cows were imported in 1606 but these were destroyed soon after by English raiders. When the Acadians were finally expelled in 1755 it was estimated that there were 1,500 cows in the Minas



Basin. The fertile lands of the Valley attracted immigrants from New England and they brought with them several herds of cows. In 1783-85 the United Empire Loyalists brought large numbers of milch cows into the country.

The French-Canadian cow, which is a registered dual-purpose breed, can be traced to the cattle imported into Quebec from Normandy and Brittany about 1660-65. Huntingdon County in Quebec and Oxford County in Western Ontario received English and Scottish immigrants, as well as United Empire Loyalists settlers, who helped to lay the foundation of productive dairy enterprises in Canada.

In Western Canada the Hudson's Bay Company made some attempt in the early part of the nineteenth century to bring in cattle first from England, and later from the United States. Many of them, however, had to be killed to provide meat. Lord Selkirk sent cows from the Old Country through York Factory to meet the needs of the Red River settlement. Many were destroyed in the Indian raids, but later importations from the United States provided the pioneers with a nucleus through which the dairy industry was eventually extended.

On the Pacific coast, importations were made largely from the south, principally from California, and many of these cows were of Spanish origin. Both Vancouver Island and the delta area of the mainland provided ideal conditions for the development of dairying.

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#### No. 15. Sun. Oct. 15, 1944 -- Development of Canadian Dairying

Dairy enterprises developed slowly during the early colonial period in Canada. Meat and grain were more important to fur traders and trappers than anything that could be supplied from dairies; and even after the lumbering industry penetrated the woodland areas of Ontario and Quebec, transportation difficulties limited the outlets for perishable foods such as butter and milk. Cheese was used to some extent, yet it could not compete with beef and pork as an article of diet. Indeed, cheese has not yet found its way into the lunch baskets of the average citizen of Canada as it has in the older countries of Europe.

Considerable quantities of cheese were made, however, as early as 1764 and it was recorded that six tons were exported to Britain from Nova Scotia. Even butter was shipped to the Old Country from Lower Canada early in the eighteenth century, although it was not until butter was made in factories under modern methods of production, and refrigeration that spoilage was overcome. At that time butter could not be stored successfully and its marketing was generally limited to the residents of communities within easy hauling or shipping distance from farms.

The development of the St. Lawrence canal system aided in the shipment of dairy products, but even during the first quarter of the nineteenth century progress in dairying was far from spectacular. After the 1837-38 rebellion, and more particularly when the building of railways began in the middle of the century, there was a general improvement in distribution facilities upon which dairy farmers were able to capitalize. The growth in industry and population in Central Canada during this period created a greatly increased demand for food products. By the time the Canadian Pacific Railway linked the West with the East, dairy farming had become an established industry of considerable importance to the economy of the Dominion. But real progress in dairying did not take place until the beginning of the nineteenth century, when science came to the rescue of the dairy farmer.

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No. 16. Mon. Oct. 16, 1944 -- Inventions Which Assisted Dairying

Three inventions stand out prominently in the history of dairying: first, the invention of the Babcock Test (1890); second, the invention of the cream separator (1880); and third, the introduction of pasteurization. The latter revolutionized dairying by improving the quality of cream and milk used in manufacture or fluid distribution.

Although the first pasteurization machines came into Canada from the United States in 1896, it was about 1912 before this method received much recognition in this country. Before Dr. Babcock of Wisconsin brought out his tester, now unanimously accepted by the dairy industry, rather crude methods were employed for measuring the fat content of milk, none of which was very satisfactory. The Babcock Test has been generally used in Canada since about 1900.

The cream separator was first developed by Neilson in 1878 and later by De Laval (1879). In 1890 there appeared a machine made by Alexander. All were based on the principle of the centrifuge operated at a high speed; since cream is lighter than milk, the latter gravitates below and the former rises to the top. A hollow bowl was used in the earlier machines. This method was improved upon by the use of a spindle into which the bowl was placed, and later by the introduction of a series of disks within the hollow bowl. This plan assured a more perfect separation of the two elements, and its success is proved by the fact that it is still in use.

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No. 17. Tues. Oct. 17, 1944 -- Cheese

The production of cheese dates back many centuries in history. Cheese was made in some form or other before the Christian era by Jews, Greeks and Romans. The nomadic tribes of Asia and Africa also made it at a very early period.

In Switzerland cheese is often made from goat's milk and cured in caves. The French and the Danish people have developed varieties of cheese peculiar to their tastes, while Cheddar and Cheshire cheese has been produced in England under a technique developed through several centuries of experimentation. Cheddar cheese was introduced into the United States by early British settlers, and the system of making it followed in the United States was later employed in the making of cheese in Canada. Of course, for many years the cheese produced in Canada was largely made on farms, the makers using methods that many had probably learned at home in Great Britain or elsewhere. As the producers gained experience in cheese making they improved their technique, and some of them established reputations as cheese makers which often extended beyond the limits of their own communities.

The census of 1861 placed the output of cheese in Ontario at well over three million pounds, which seems to have been the peak point in its production on farms. At that time Oxford County was the centre of cheese production, although Glengarry County also turned out a considerable volume. George Cross of Georgetown, considered one of the foremost cheese manufacturers of that period, won a silver medal at the exhibition in Paris in 1865 with cheese that he had produced on his own farm.

Cheese making on a commercial scale had its origin in New York State, the method employed being an adaptation of the system used in England where cheddar cheese has been made for over two hundred years. The first factory in North America was established in Oneida County, New York State, in 1851. The system employed was introduced into Canada by Harvey Farrington, who built the first factory in Oxford



County, Ontario, in 1864. In 1866 another factory was established at Ingersoll and in the same year cheese production in Eastern Ontario had its beginning with the erection of a plant at Athens.

The factory system spread very rapidly in Ontario and in 1867 there were 235 factories in operation, 36 of which were in South Oxford. But as the population increased that part of the province turned to other branches of dairy production and in recent years the cheese making area has shifted to the eastern counties.

Cheddar cheese production was introduced into Quebec in 1865, the first factory being built at Dunham in Missisquoi County in that year. In 1872 a factory was opened at St. Denis, Kamouraska County, which was the first development of this kind in a French-Canadian community. Before the close of the last century there were 50 cheese factories in Huntingdon alone, and cheese making was the main branch of the dairy industry in the Eastern Townships. With the rise in demand for fluid milk and the increase in land values, the production of cheese moved into the newer sections of the province, remote from large urban centres. Most of the cheese in Quebec is now being made in the north-east and lower St. Lawrence areas.

Most of the Canadian make is still produced in Ontario and Quebec, where farms are sufficiently numerous to obtain supplies within a convenient hauling distance of the factory. In 1943 approximately 68 per cent of the total was produced in Ontario, and 30 per cent in Quebec. Mention should be made, however, of other provinces. Cheese making was introduced in New Brunswick in 1870 and the first factory was established in 1886 in Manitoba, which now makes enough cheese to provide a surplus for sale outside the province. During the past ten years a number of factories have been built in Manitoba and Alberta; also a few in Saskatchewan and British Columbia.

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#### No. 18. Wed. Oct. 18, 1944 -- Varieties of Cheese Produced

As stated in the preceding "Fact" the principle of cheese making is one of the most primitive operations of the dairy industry. There are three main classes of cheese; hard cheese, soft cheese, and processed cheese. Most varieties of hard cheese are made from whole milk. Cottage cheese is a well-known product made from skim milk. Cheddar, Cheshire and Stilton varieties of hard cheese are well known, although there is little whole-milk cheese, other than Cheddar, made in Canadian factories at present. In 1943 a little more than two million pounds of other cheese were produced as compared with 162 million pounds of Cheddar cheese. Farm-made cheese amounted to considerably less than one million pounds, over half of which was produced in Ontario and British Columbia.

The principle employed in Cheddar cheese manufacture is the coagulation of milk to permit the separation of the whey from the curd. In the modern cheese factory milk is placed in long vats and kept at a constant temperature during the period of coagulation. To aid in throwing the solids out of a state of semi-solution, a starter commonly known as rennet is added. Rennet is obtained from an extract found in the fourth stomach of calves, and contains an enzyme known as pepsin which reacts on milk to produce the results desired. When the whey is drained off, the curd is dried, milled, and finally pressed into large cylindrical blocks, usually of the standard size of 14 to 16 inches, weighing 70 to 90 pounds.

Since most of the cheese is now required for export to the United Kingdom, wartime regulations make it necessary for makers to meet the minimum requirements in

respect to both size and weight. Cheese being shipped to Britain must also be unwaxed and uncoloured. Vat numbers and registration numbers of the factories are stencilled on the boxes so that off-flavoured cheese can be traced to its origin. The regulations of the Dairy Act require cheese to be kept in the factories for a period of eight days, although it takes several months for cheese to be properly cured. Green cheese is inclined to be rubbery and is not rated as a highly dependable product. In judging Cheddar cheese 70 points out of 100 are usually given for flavour and texture.

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No. 19. Thurs. Oct. 19, 1944 -- Cheese Factories

Little is known about the quantities of cheese made in factories during the early years of factory production, but data covering the numbers of plants in operation are shown in the census commencing with 1871; and export figures indicate the rapid expansion which took place in the cheese trade over a period of 35 years. This new business quickly seized the imagination of capitalists and farmers alike. Cheese factories sprang up here and there throughout the settled areas of Ontario and Quebec, many being built on side roads and back concessions where patrons had the advantage of short hauls in taking their milk to the factory.

In the light of subsequent experience the possibilities of over-development might have been foreseen. But there were few to offer warning; for farmers had found an outlet for their produce at a time when they were struggling for a livelihood and agriculture was in the making. The time came when many factories fell into disuse, but regardless of this circumstance it should be recognized that the cheese industry came into being under the impact of restricted markets, and its expansion in the eighties and nineties laid the foundation for other branches of dairy enterprise that have far exceeded the hopeful expectations of years ago.

The census of 1871 showed 353 cheese factories in operation, of which 323 were in Ontario and 25 in Quebec. In 1881 the number increased to 709, Ontario claiming 551 and Quebec, 140. Ten years later the number was more than doubled, 1,565 factories being reported, with 893 in Ontario and 617 in Quebec. Before the turn of the century, creameries had commenced to spring up and some factories made both butter and cheese. Yet the census of 1901 showed that cheese factories alone had increased to 2,389. Differing from the earlier period, Quebec led with 1,207 as against 1,061 in Ontario. With the addition of combined factories there was a total of 2,947 factories, 1,547 in Ontario and 1,233 in Quebec.

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No. 20. Fri. Oct. 20, 1944 -- Export Trade in Cheese

Owing to the suitable climatic conditions for the production and curing of cheese in this country, the Canadian product has long enjoyed a high degree of popularity in the British market, to which practically all exports of Canadian cheese are shipped. (A great deal of the cheese sold on the British market loses its identity before it reaches the ultimate consumer, and many are unaware that it is a Canadian product.)

Long before factory production had commenced, Canadian cheese was being shipped to Britain in considerable volume. Canada exported approximately 19 thousand pounds of cheese in 1850 and 124 thousand pounds in 1860. In the fiscal year ended June 30, 1867, exports were placed at 1½ million pounds, and in the following year, when the first cheese factories were opened up, shipments from Canadian ports had



risen to approximately six million pounds. In 1871-72 exports advanced to 16 million pounds and in 1881-82 nearly 51 million pounds moved out of Canada.

By the end of the next decade 118 million pounds were shown in the export returns, and in 1898 shipments had advanced to nearly 197 million pounds. Cheese exports passed the 200 million mark during the year ended June, 1902 and rose still further to 234,432,783 pounds in 1903-04.

Commencing with 1905, cheese exports began to decline. In Canada a new economy was in the course of development, which made it necessary to give first consideration to the home market created by the rapidly expanding population. Milk formerly used for cheese making became diverted to creameries for the production of butter, and in the ten years prior to the first World War competition from the butter industry manifested itself in the cheese producing areas. By 1910 exports for the fiscal year had fallen to 180 million pounds, and in 1914 to 144 million. During the war period the peak export movement was reached in 1916-17, when 180 million pounds were shipped from Canada. From that time, however, the decline was more or less continuous, with the exception of the years 1924 and 1925 when production took an upward turn. In the calendar year ended December, 1930, only 80 million pounds were shipped out of the Dominion, and by 1935 exports had fallen to 56 million pounds, the lowest point in fifty-three years.

In view of the importance of cheese manufacturing to the industrial progress of Canada, efforts were made to restore the opportunities that cheese makers had lost, and thereby to strengthen Canada's export position on the British market. Bonuses for quality cheese were offered by the Dominion Government, and financial aid was given to assist in the amalgamation of factories. This tended to give some encouragement to cheese manufacturers, and during the three years prior to the war more cheese was produced and the export trade increased.

Exports have now reached a point comparable with those of twenty years ago, and in this respect it is only fair to recognize the important contribution cheese is making to food stocks for shipment overseas.

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No. 21. Sat. Oct. 21, 1944 -- Butter

Butter has been produced on the farms of Canada since the days of early settlement. As the population increased, the producers sold or bartered their surplus for goods in the nearby towns and villages, and the production for disposal off the farm greatly expanded.

The census of 1861 showed a production of nearly 27 million pounds of butter in Upper Canada and 16 million in Lower Canada. Ten years later, 74 millions pounds were produced in Canada, and by 1881 farm-made butter was apparently produced in practically all sections of the Dominion, the total being 102 million pounds for the whole of Canada.

As late as the early eighties the methods employed in the production of butter were more or less primitive as compared with the systems now in use. The utensils, of course, were of wooden construction and butter was worked entirely by hand. The dash churn was commonly used on farms and it had a very limited capacity. It was superseded first by the box churn and later by the barrel churn, which is now in use. Since cream separators did not appear on the market until late in the century, the milk was set in shallow pans or deep cream cans with a tap at the bottom from which milk could be removed. When the pans were employed

the cream was skimmed after the milk had stood long enough to permit it to rise to the top. The cream separator revolutionized farm dairying; for not only did it prove to be a labour-saving device, but it also made a more complete separation of the milk and cream and made the latter easier to churn into butter.

For the twenty years prior to 1900 cheese factories absorbed large quantities of the surplus milk produced on farms, but about 1890 creameries began to spring up, giving farmers a new outlet for their milk. Dairy butter continued to be made in relatively large quantities for many years, however. The census of 1891 showed that 111 million pounds were produced in the previous year. The make fell in 1900 to 105 million pounds. However, with the influx of settlers into Canada and the expansion which took place during the next decade, a great deal more butter was being consumed. In 1910, therefore, it was found that 137 million pounds had been made on farms, despite the fact that the creamery make had also reached sizeable proportions. Owing to lack of facilities for large production of butter on farms, and difficulties in storage and shipping, the market for the farm product was more or less restricted.

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No. 22. Sun. Oct. 22, 1944 -- Butter Production in Creameries

Butter factories, when first established, collected whole milk, but with the introduction of cream separators farmers were able to sell their cream and retain the skim milk for feeding stock. At first the cream was paid for according to volume. Various systems were tried out for measuring the butter-fat content, but it was not until the Babcock tester came on the market that this method was scientifically applied.

The first creameries in Canada were built in the Province of Quebec; one was started in Huntingdon County in 1873 which only continued in business for a short time, but another more fortunate venture was started in the same county shortly afterwards. In 1875 another creamery was built at Rockburn and the first cream-gathering system was instituted in Drummond County, Quebec, in 1878. Teeswater, Ontario, claims to have had the first creamery in that province, built in 1875. In 1886 the first creamery was opened in Manitoba, and creameries were built at Saltcoats, Saskatchewan, in 1890, and at Innisfail, Alberta, in 1894.

In the census of 1891 there were 181 creameries in Canada, 111 of which were in Quebec Province. By 1901 the number had grown to 629, and by 1911 to 1,092. The first estimate covering the production of creamery butter showed an output for the year 1900 of 36 million pounds. In 1915 the quantity had increased to 84 million pounds, and in 1920 to 112 million pounds.

Butter production exceeded that of cheese in 1922 and in subsequent years the output steadily increased. In 1934 nearly 235 million pounds were produced, and in 1943 the output had advanced to the all-time high of 312 million pounds.

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No. 23. Mon. Oct. 23, 1944 -- Dairy Butter

Reference has already been made to the contributions of science to the dairy industry. In this connection special emphasis should be placed upon the importance of pasteurization during the last thirty years. A few pasteurizers were introduced in the late nineties, but it was not until about 1911 that the pasteurization of cream was given any consideration. Coupled with pasteurization was the



cream inspection system and the grading of butter. The quality of the product has immensely improved, and as compared with only 44 per cent in 1923, when the inspection system was inaugurated, all butter now offered for inspection is made from pasteurized cream.

The growth of the creamery trade has naturally had a marked effect on the proportion of dairy butter being made on the farms. In 1900 the dairy production represented approximately 75 per cent of the total make. In 1910 it had fallen to less than 69 per cent, ten years later to 48 per cent, and in 1930 to 34 per cent.

During the thirties there was very little change in dairy butter production, nor did the creamery product show every substantial gains. But, with the outbreak of war, control measures were introduced which reacted unfavourably on the dairy butter output. The payment of a butter-fat subsidy, introduced in July, 1942, amounting initially to six cents a pound and raised to 10 cents for the winter period and also later increased for summer deliveries, has tended to discourage dairy butter production, which dropped in 1942 to 79 million pounds and in 1943 to 55 million pounds. The latter quantity represented only 15 per cent of the total butter made in that year.

It is well known that Canadians are large consumers of butter. Their tendency in this respect shows no signs of diminishing, judging from the continued increase in domestic disappearance over a period of years. In 1921 Canadians consumed 227 million pounds, an average of 25.8 pounds per capita. In 1930 the per capita consumption was 30.6 pounds and in 1935 it had moved up to 31.3 pounds. Even with the application of rationing, the immense volume of 337 million pounds, or 28.5 pounds per capita, was consumed in the Dominion in 1943.

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No. 24. Tues. Oct. 24, 1944 -- Concentrated Milk and Ice Cream

Although the production of concentrated milk is less important than that of butter and cheese, the establishment of condensaries and dry-milk plants opened up an outlet for milk that has proved of great benefit to farmers in the areas served by these factories.

The first condensary was built at Truro, Nova Scotia, in 1883, and the 1901 Census reported four condensaries in operation. The number increased to eleven in the course of the next ten years and 14 establishments were reported by 1915. In 1926 there were 28 plants engaged in the production of condensed and evaporated milk and milk powder. The industry is now centred in Ontario, where the greatest volume of surplus milk is available and where 19 of the 26 plants now operating in Canada are located. In addition, about 64 plants, including a large number of creameries, use surplus milk in the making of powder, principally skim-milk powder and buttermilk powder.

The three most important whole milk products are evaporated milk, condensed milk, and whole milk powder, and the quantities produced in 1943 were 168 million, 27 million, and 17 million pounds, respectively. Skim-milk powder is also made in considerable amounts, the 1943 returns showing an output of approximately 23 million pounds.

Ice cream has long been regarded as a highly digestible product, and large amounts are consumed annually in Canada. The production and consumption of this product has greatly increased in recent years, and it is a significant fact that,

although some wartime restrictions have been imposed on the quantities manufactured for civilian use, the output has increased from 14 million gallons in 1941 to 17 million gallons in 1943. The additional gallonage was sold mainly to National Defence establishments and to organizations serving troops in military camps.

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No. 25. Wed. Oct. 25, 1944 -- Production and Utilization of Milk

The expansion of the fluid milk trade within the last 25 years is quite properly offered as one of the principal reasons for the decline in cheese manufacturing. But while milk sold for fluid consumption might have been profitably used for other purposes, it is also recognized that the development of the fluid milk industry was in the best interests of farmers and consumers alike.

Producers who have been able to cater to the fluid milk trade in the large consuming markets of Canada have been able to enhance their income to a marked degree. Moreover, the continuity of supply required by this trade has given the entire dairy industry a degree of stability which it would not have attained under an irregular system of production. Finally, and certainly most important of all, it has brought improved health to people who have learned the food value of milk.

The importance of the different branches of the dairy industry can best be visualized when the milk used in manufacture is related to the total production.

The first estimate covering the total milk production of Canada was made in the Census report of 1911, which placed the farm output of milk in 1900 at seven billion pounds and in 1910 at somewhat less than 10 billion pounds. This increase occurred during a period of extensive land settlement, when the number of farm holdings advanced by approximately one-third, and breeding stock was shipped out in large quantities to the western prairies to meet the need of the new settlers.

In the course of the next decade the quest for new land had practically ended, the number of farm occupants increased only four per cent, while the milk-cow population made a gain of 28 per cent. Milk production did not entirely reflect the increase in cow numbers, although the total advanced to almost 11 billion pounds in 1920. In the decade 1920 to 1930 the move toward dairying was much more pronounced, and the production of milk reached a total of over 12 billion pounds. In 1940 it had advanced to 16 billion pounds and in 1943 to 17½ billion pounds.

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No. 26. Thurs. Oct. 26, 1944 -- Canadian Milling Industry

During the past crop year the production of flour in Canada broke an all-time record, a record which had only been established during the preceding year. The Canadian flour milling industry turned out a total of 24.3 million barrels in 1943-44 as compared with 23.6 in 1942-43. When converted to wheat at the rate of 4.5 bushels to a barrel the milling industry is seen to have processed about 110 million bushels of wheat into flour in each of these years. When this consumption of wheat is compared with an average Canadian production of 425 million bushels for these two years the magnitude of the industry becomes impressive.

It is obvious that we Canadians cannot consume this great output of flour. Nor do we. Domestic disappearance has been approximately 11 million barrels per annum for the past two years and the remaining 12 to 13 million barrels have gone into export channels. Glancing back to the turn of the century we note that flour exports have constituted an important, but variable, proportion of total exports



of wheat and wheat flour. The growth of the industry may be conveniently pigeon-holed into five periods. The first of these is a period of gradual development from 1900 to 1914; the second, under the stimulus of war, one of rapid growth from 1914 to 1918; the third covers the period of readjustment and expansion from 1922 to 1928; the fourth, the period of depression from 1929 to 1938 and the fifth from 1939 to the present, a period of recovery to meet the needs of World War II.

From 1900-1914, the industry developed step by step with the growth of the wheat economy on the Western Prairies and flour exports grew with the development of an export market for Canadian wheat. In 1900 Canada exported one million barrels of flour; in 1914 she exported five million barrels.

During World War I flour exports doubled as Canada strove to supply the Allied nations with food. The post-war slump in the industry was of relatively short duration and during the third period from 1922 to 1928 flour exports averaged 10.7 million barrels per year, a record which has yet to be broken. Following 1928, exports dropped back to their pre-World War I level as European importers raised their tariff walls against foreign wheat and flour in an effort to promote economic self-sufficiency. With the outbreak of the present conflict Canada's flour exports have risen from 6.8 million barrels in the crop year 1939-40 to 13.5 million barrels during the crop year which has just closed.

The United Kingdom has always been Canada's best customer for flour, although the proportion of total exports which she has taken has varied widely according to non-Empire demands. Thus, in the calendar year 1928 Britain took 27 per cent of total exports, 57 per cent in 1937 and 59 per cent in 1943, as other outlets were closed. The British West Indies and Newfoundland have also been important customers.

An important by-product is provided by the flour milling industry in the form of millfeeds which, because of their palatability and protein content, are a valuable feed for dairy cows. During 1943-44, some 795,000 tons of millfeeds were produced in Canada and practically all was retained for domestic feeding purposes owing to the shortage of high protein feeds.

At the present time Canadian mills are booked to capacity as the country is called upon to supply flour to the United Nations and liberated Europe. Since Canadian flour enjoys a high reputation abroad and the Canadian mills have an abundant source of raw materials and power, there are good prospects of maintaining a high level of exports into the post-war era.

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No. 27. Fri. Oct. 27, 1944 — Canadian Vocational Training

Canadian vocational training provides the following types of training:- pre-employment classes in vocational schools for men and women about to enter war industry; part-time classes, principally for the upgrading of persons already employed; training plant schools; special classes for foremen and supervisors; training of enlisted men as tradesmen for the Army, Navy and R.C.A.F.; rehabilitation training for persons discharged from the Armed Forces in the present war and referred for training by the Department of Pensions and National Health; assistance to certain categories of university students whose services are needed in connection with the war effort.

Canadian vocational training is carried on under agreements made by the Dominion Government with each province. The administration is decentralized with

a Regional Director in each province. Training is given in technical schools, special training centres and in industrial plants. The provinces and municipalities supply the shop facilities of the technical schools to the program free of charge. Provincial Governments also pay certain administrative costs and share with the Dominion in the cost of machinery and equipment purchases. All other costs are paid by the Dominion with funds from the War Appropriation.

From its inception up to July 31, 1944, the gross enrolment under Canadian Vocational Training has been as follows:- Training for industry, 229,329; Army tradesmen, 43,155; Navy tradesmen, 8,259; R.C.A.F. tradesmen, 65,138; rehabilitation (discharged persons from the forces), 4,010; students, 5,373; total 355,264.

The gross enrolment in all types of classes on July 31, 1944, was 5,398 which constitutes the lowest figure during the operation of the program. Of this enrolment 2,713 were tradesmen from the Army, Navy and Air Force. Very few full-time pre-employment classes for industry were carried on during the month. Out of the total of 139 plant schools that had been approved up to July 31, 1944, 27 were still operating, the others had all met their requirements and had suspended operations.

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No. 28. Sat. Oct. 28, 1944 -- Conservation of Farm Machinery

In the conservation of farm machinery, the overhauling of the equipment before being laid aside for the season and protection from the weather in late fall and winter are important factors. The life of soiled and unprotected farm machinery is often shortened more by rust and exposure than by hard work. Most farms have adequate room for the storage of machinery but under prevailing conditions on the farm it may be difficult to house heavy machinery. However, the extra care necessary in finding some efficient means of protection against the weather will add years of usefulness, particularly if the machines are thoroughly cleaned before being stowed away.

Late fall and winter is the most convenient time to adjust and repair agricultural machinery, and much reconditioning can be done with the tools available on the farm. Repairs that cannot be done on the farm should be taken to the blacksmith or other repairman as early as possible so that the work of the repairman may be evenly distributed throughout the winter.

In overhauling machinery, all bearings, axles and similar parts subject to wear should be taken apart and examined carefully. Parts that are not likely to work well for another season should be replaced, if possible. Other parts should be thoroughly cleaned, care being taken to see that the lubricating parts are working well. Parts that work in the ground, such as cultivator shovels and discs should be checked and those that are cracked or badly worn should be replaced. Other parts may require sharpening to ensure best results for the following season.

After the fall work has been completed, many farmers make a point of drawing up a list of the parts which should be replaced or repaired. Under present conditions which are likely to continue more or less until the end of the global war, that is, until the defeat of Japan, it is a wise plan to order the parts that can be ordered well in advance of actual need, so that, in the case of unavoidable delays, the parts may be on hand when wanted.

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No. 29. Sun. Oct. 29, 1944 -- Atlantic Salmon

Salmon frequent the waters of both coasts of Canada and are all members of the one family, but east and west they are different species. On the Pacific coast there are five different species, but in Atlantic waters there is only one. The Atlantic species is both a commercial fish and a sport fish but only two kinds of Pacific salmon are taken in angling -- the Spring and the Cohoe.

Salmon of both coasts spawn in fresh water but spend much of their life in the ocean. So far as reproduction is concerned, however, there is this striking difference between the Atlantic and the Pacific fish -- the latter spawn once only and then die on the spawning grounds, while the Atlantic salmon spawn several times.

In colour the Atlantic salmon is generally steel-blue on the back, sometimes shading to brownish, and the sides are silvery. Numbers of black spots are on the body, head and fins. Most of the fins are of dusky shade. Like other fish, Atlantic salmon vary a good deal in weight. Fish from 10 to 15 pounds are quite common but individuals much heavier than that are also taken.

Commercial catches of salmon are made by the fishermen of all four Atlantic provinces. Total annual catch fluctuates, of course, but in some years it exceeds 3,000,000 pounds. Landings of Pacific salmon, of course, are far greater than that. Sometimes New Brunswick leads in size of Atlantic catch, sometimes Quebec, with Nova Scotia in third place. The Prince Edward Island landings are small. All of the catch is taken as the fish make their way from the sea back to their fresh water spawning grounds.

Commercial fishing for Atlantic salmon is done by means of drift gill-nets -- so called because they are gill-nets which are operated in such a way that they drift with the tide -- and by fixed or stationary nets. The fixed nets are usually known as trap-nets or pound-nets but are sometimes spoken of by other names in one locality or another. Trap-nets are all broadly the same in construction and operation, trapping the fish in enclosures of netting instead of catching them by the gills as in the case of gill-net fishing, but there are local variations in detail. The meshes of all nets used in salmon fishing are limited in size by fisheries regulations made under authority of the Federal Fisheries Act.

Angling for salmon -- a great fun for the sportsman and a substantial source of income for fishing guides and tourist camp operators in some places -- is done with rod and line. It is permitted only at certain seasons, specified by the fisheries regulations. The regulations also provide that worms or other bait may not be used by anglers fishing for Atlantic salmon. Artificial flies only may be used. Certain "bag limits" are imposed by the regulations, which is another way of saying that where these limits apply an angler may not legally take more than a specified number of salmon in a specified time, such as a day or week.

Nearly all of Canada's commercial catch of Atlantic salmon is marketed in the fresh or frozen forms. A small quantity is canned, and sometimes a few of the fish are pickled or smoked. The great bulk of the Atlantic Salmon catch is always marketed in Canada and the United States, but for a number of years prior to World War II some shipments of the fish in frozen form were made to Great Britain.

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No. 30. Mon. Oct. 30, 1944 -- Canadian Farmers Have Fine Record

Not until the war has ended and the smoke of battle has rolled away can the great epic be told of what men and women on the home front -- the farm folk --

did to make victory possible. While the end of the story is not yet, they have achieved the seemingly impossible. After more than five years of war, the granaries, following this year's harvest, are again full to overflowing, the greatest number ever of live stock has been maintained on Canadian farms and ample feed has been grown for them. The 1944 grain crop alone is the third largest during the past eventful five years.

Gradually sapped of many thousands of young and experienced workers called to other spheres of war work, faced with long hours of labour even after dark and dependent on uncertain and often adverse weather, the Canadian farmer and the members of his family bravely buckled to their task and again have scored splendidly on the food front. What the anxieties of the farm folk have been throughout the years, they alone can know. Looking over their fields before the sowing for the fifth war harvest, they wondered what the fates had in store for them and for the millions of people dependent on them for food. The urgent cry for food was still being raised — food for the armed forces, food for the Canadian people, food for the Allies, food for the starving peoples of Europe and Asia. The farm folk of Canada again responded to the cry.

To the unthinking man, food comes as a matter of course and is often the object of grumbling as to quality and quantity, but food is the basis of life in peace or war. More than anyone else the farmer knows and appreciates that fact. At the latter part of 1939 when war came, the farmer loyally laid aside many of his individual plans for running his farm and started to work for the common weal with a patriotic zeal. The following year saw no let-up in the stress and strain, and in the subsequent years came still more increasing demands for food, and with dwindling help and less machinery.

Whatever is ahead, the farm folk face the situation courageously, hoping indeed that it may be their good fortune to have more help on the farm and more equipment, but planning just the same to meet the demands that may be made upon them. Not until peace has returned to the world will the full story be written into the national record of the great contribution the Canadian farmers and their families made on the farm front so that victory could be assured on the battle front.

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#### No. 31. Tues. Oct. 31, 1944 -- Canada's Merchant Fleet Grows

Canadian merchant seamen are providing the crews for a fleet of merchant ships which has grown, in the space of less than five years, from 37 at the outbreak of war to nearly 150 ships — a fleet which may total more than 300 at the end of the war.

In September 1939, Canada had 14 fairly large shipyards and 15 smaller boat-building establishments, employing less than 4,000 men in the construction of merchant vessels. At the peak of its shipbuilding program, reached in the summer of 1943, there were 25 major and 65 smaller yards in operation, with 75,000 men and women at work in them.

The cargo vessel program was entrusted to a crown company, Wartime Merchant Shipping Limited. In December, 1943, however, it was decided to merge the administration of the cargo boat program with that of the naval shipbuilding. Wartime Merchant Shipping Limited was renamed Wartime Shipbuilding Limited, and supervision of combat ship construction was added to its cargo shipbuilding activities.

More than 400 cargo ships have been ordered, and 312 delivered. Those delivered include 285 of the 10,000-ton class, 23 of the 4,700-ton class and four 3,000-ton tankers. The 10,000-ton cargo vessels are of four main types; North Sands, Victory, tankers and Canadian. All have a deadweight tonnage of 10,350 tons; length, 441 feet; beam, 57 feet; depth, 37 feet; draught, 27 feet; speed (loaded) 11 knots;



triple expansion engines of 2,500 horsepower. They all need crews of 50 officers and men, exclusive of gunners.

It is estimated that a 10,000-ton cargo vessel, after loading with ship's stores and water, will carry on an average the following cargo: 2,850 tons of flour, cheese, bacon and ham to feed 25,000 persons for a week; 2,150 tons of steel; enough motorized equipment to outfit a full infantry battalion; 1,900 tons of bombs; sufficient lumber, plywood, wall-board and nails to build 99 four-room cottages or a row of dwellings nine blocks long; sufficient aluminum to build 310 bombers or 640 fighter planes; and two complete bombers stowed on the aft deck in knocked-down condition.

The 4,700-ton ships have a length of 328 feet; beam, 46½ feet; depth, 25 feet; draught, 20 feet; deadweight, 4,700 long tons; triple expansion engines of 1,176 horsepower; speed (loaded) 10 knots.

Of the 312 ships delivered by Canadian shipyards, ninety 10,000-ton vessels were sold to the United States Maritime Commission and two to the British Ministry of War Transport. In addition, the Canadian government has delivered 102 ships to the United Kingdom and one ship to Australia under Mutual Aid. These vessels are manned and operated by the United Kingdom and Australia for the duration, but are returnable to Canada at the end of the war.

The Park Steamship Company, a crown company, was set up to control, supervise and manage merchant ships built in Canada and retained for operation under Canadian registry. Of the new merchant ships there are at present 117 ships operated by the Park Steamship Company -- eighty-seven 10,000-ton cargo vessels, eighteen 10,000-ton tankers, eight 4,700-ton cargo vessels and four 3,600-ton tankers. All these ships bear the names of Canadian parks and have been allotted to trade routes where tonnage is required. In order to develop the Canadian shipping industry, these Park ships are allotted to Canadian shipping firms who are appointed by the Park Steamship Company as operating managers.

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