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C O N T E N T S

No. 183. Sun. April 1, 1945 -- Honey

All through the warm summer months the honey bee will be found feverishly gathering the nectar from the blooms of flowers which abound in the fields and gardens. In most cases they store away far more than their requirements for the coming winter and the surplus honey is taken from them and used as human food. The bee has figured from ancient times in our proverbs. It competes with the ant as a symbol of industry and perseverance.

Increased interest in beekeepers has been in evidence in Canada since the outbreak of war in 1939, the total number of beekeepers rising to a record figure of 40,676 in 1944. The average number in the five years preceding the war was 26,860. In spite of a substantial increase in the number of colonies during the year, Canada's 1944 honey crop was reduced, standing at 34,970,000 pounds, a decline of 11 per cent from that produced in 1943. The average yield for the past season was only 69 pounds per colony compared with 88 pounds in 1943 and the pre-war average of 93 pounds. Adverse conditions in eastern Canada were chiefly responsible for the reduction.

While the honey crop in 1944 was the second largest since the outbreak of war, it was, however, two per cent smaller than the average crop in the years from 1935 to 1939. Production was higher in 1944 than in the preceding year in Prince Edward Island, Manitoba and Alberta, while smaller crops were harvested in Nova Scotia, New Brunswick, Quebec, Ontario, Saskatchewan and British Columbia. With the exception of Alberta the increase was entirely due to the increase in the number of colonies.

The importation of package bees from the Southern States is an important feature of the Canadian bee-keeping industry, and this year the demand reached an all-time high. Some United States producers were booked to capacity. Representatives of western Canadian honey producing organizations made special trips to the Southern States last fall to make contacts for their spring requirements of package bees.

No. 184. Mon. April 2, 1945 -- Advances in Dehydration

Notable advances made in the dehydration of fruit and vegetables are fitting tributes to the intensive work of Canadian scientists, particularly of the Scientific Service of the Dominion Department of Agriculture. A year before the outbreak of war, commercially dehydrated vegetables were subjected to a round-the-world shipping test. The cabbage in this consignment was hermetically sealed in one-half pound cans at atmospheric pressure and under 28 inches of vacuum. The shipment was by non-refrigerated freighter to Singapore.

The shipment required about six months for the round trip, during which the controls were held at 32 degrees F. storage at the Division of Horticulture, Ottawa. The experiment indicated that an elevated storage temperature was detrimental but it was not recognized at the time that the high moisture content of the material was one of the prime factors in the reduction of quality.

After the outbreak of war, when available shipping space for foodstuffs was drastically reduced, attention was again centred on dehydration. For the two previous decades, the apple evaporation and dehydration industry had been largely localized in the Annapolis Valley of Nova Scotia. Continued research by the Dominion Department of Agriculture had established the superiority of the Eidt tunnel for apple dehydration. A model tunnel had been built at the Dominion Experimental Station, Kentville, Nova Scotia, and preliminary runs had been made with vegetables.

With a few changes in design, the tunnel proved adaptable to both fruit and vegetable dehydration.

In 1941, representatives of the Department who had been conducting research in fruit and vegetable dehydration assembled at Kentville to pool their information and conduct intensive experiments. It was common knowledge among these experts that blanching was necessary in order to obtain good colour, flavour and texture, and that cabbage treated with a sulphite solution generally resulted in a product of superior colour. Since then, huge advances have been made. For the past four years extensive experiments carried out at the Central Experimental Farm have indicated that there are contributory factors in obtaining dehydrated cabbage of top quality with maximum storage life. These factors, in processing order, and not in importance, are: quality of fresh products; incorporation of SO_2 in the product; balancing time, temperature, and type; dehydrated procedure; moisture content; package atmosphere; and storage temperature.

No. 185. Tues. April 3, 1945 -- R.C.A.F. Comes of Age

The Royal Canadian Air Force, Canada's youngest service, has passed its 21st birthday. The R.C.A.F.'s record is more impressive when it is realized that at the end of the first 16 years of its existence its strength was a mere 4,000. But that nucleus was strong and virile and the outbreak of war found the R.C.A.F. shouldered with a tremendous job - the British Commonwealth Air Training Plan. The R.C.A.F. was born April 1, 1924 when "King's Regulations and Orders for the Royal Canadian Air Force" providing for an Active (Permanent and Non-permanent Force and a Reserve), became effective.

For the next fourteen years the service was a branch of the Army. The service made some important strides from 1935 on, but it was not until later in 1938 that the R.C.A.F. became a separate service under a Chief of Air Staff directly under the Minister of National Defence.

When war broke in Europe and Germany overran Poland, the R.C.A.F. went on active service eight days before Canada officially entered the struggle. Training was intensified to provide for an overseas force but the signing of the British Commonwealth Air Training Plan, December 17, 1939, committing the R.C.A.F. to heavy duties in the manning and administration of the project, forced a change in plans. It was decided that only one squadron could be sent overseas - an Army Co-operation squadron - to work with the First Canadian Division.

The rest of the R.C.A.F. was fully occupied in turning out aircrew and ground crew by the thousands as the plan mushroomed across the country. Eventually more than 150 R.C.A.F. training stations were in operation and at the peak of the plan aircrew personnel were being trained at the rate of more than 50,000 a year.

The success of the gigantic undertaking exceeded the fondest dreams of its originators and a gradual reduction in training quotas was ordered. In the meantime, besides fliers from the United Kingdom, Australia, New Zealand and other parts of the Commonwealth, thousands of young Canadians were trained in the highly complex methods of aerial warfare. Canadians fought in every theatre of war, in R.C.A.F. Squadrons or in the R.A.F. They fought at Dieppe, in the Battle of Britain, in North Africa, over Burma, in the Aleutians, along the coasts of Canada, across the North Atlantic, and over Europe, Germany and Berlin.

They dropped munitions and supplies to guerilla fighters in France and the Balkans. They scooped helpless comrades from the icy waters of the Atlantic and from the relentless sun that warms the Indian Ocean, they helped sink the German Navy's pride, the Tirpitz - 19 Canadians were present at that job - they manned and guarded outposts in Iceland and along the Red Sea and they lived and fought and died with underground forces in Europe. The deeds have not gone unnoticed. More than 5,000 honours have been received by Canadian airmen - an average of one to every 17. These include the Empire's highest award - the Victoria Cross awarded posthumously to F/L David Hornell of Mimico, Ontario.

No. 186. Wed. April 4, 1945 -- Interprovincial Migration

The extent of interprovincial migration of the population of Canada during the decade 1931 to 1941 has been determined by the Dominion Bureau of Statistics, the tabulation being based on answers to special questions dealing with previous place of residence incorporated in the 1941 Census. It is, of course, impossible to conjecture how the Post War development will affect the currents of population movement, nor can it be foretold whether the direction will be similar to that which characterized the war years, when the movement was mainly from the thinly settled sections to the densely settled parts, and in particular to the metropolitan areas of the larger cities. Knowledge of the past 20 years indicates that a movement of the population from the farms to the cities is characteristic of eras of economic prosperity, and from the cities to the farms when economic activity is lower.

During the inter-censal decade the greatest exodus of the population of the individual provinces was recorded by Saskatchewan, 188,204 persons leaving the province, while in-migrants totalled 30,659, leaving a net decrease in the population through migration of 157,545. The net decrease in the population of Manitoba through migration was 48,478, Alberta 41,841, New Brunswick 10,177, Prince Edward Island 2,672, Quebec 1,584. On the other hand, the net increase through migration in the population of the Province of British Columbia was 82,498, Ontario 77,484, and of Nova Scotia, 7,848.

The figures which follow show the number of in-migrants to the provinces during the inter-censal decade, 1931-41, with the totals of out-migrants in brackets: Prince Edward Island, 3,074 (5,746); Nova Scotia, 27,646 (19,798); New Brunswick, 16,551 (26,728); Quebec, 88,369 (89,953); Ontario, 200,993 (123,509); Manitoba, 47,571 (96,049); Saskatchewan, 30,659 (188,204); Alberta, 53,934 (95,775); British Columbia, 138,008 (55,510).

No. 187. Thurs. April 5, 1945 -- Fur Farming

Although the fox was the first important commercial fur-bearing animal to be raised in captivity in Canada, many other kinds of fur-bearing wild animals are now being raised. These include mink, raccoon, skunk, marten, fisher and rabbit. From 1920 to 1939 fur farming in the Dominion expanded rapidly and during that period there was a marked change in the type of furs that were most acceptable to the market. Black fox were popular 25 years ago. A few years later the highest prices were being paid for quarter- and half- silvers, and during recent years the full-silver and new-type have been setting the upper price limit.

The development of the new-type fox and mink has proven to be an incentive to the fur farming industry. New-type fox such as platinum, platinum-silver, pearl-platinum and white-marked are meeting a ready market as are the new-type

mink including silver-sable, platinum-silver blue, snow-white and a number of other colour phases. In 1939 the Dominion Government introduced the grading of furs under the Department of Agriculture. One of the main objectives in grading is to secure uniformity, so that furs may be bought by grade without the necessity of buyers from foreign countries personally examining the pelts.

Total revenues from the sale of pelts and live animals from fur farms throughout Canada amounted to $9,846,000 in 1943, an increase of $2,690,000 or 38 per cent over that of 1942. Pelt sales had a total value of $8,959,000 as compared with $6,739,000, and the sale of live fur-bearing animals a value of $887,000 as compared with $417,000 in 1942. Of the total revenue, silver fox accounted for 46 per cent, platinum and white marked for 11 per cent and mink 41 per cent. Average values for all pelts and for most live animals sold showed marked increases in 1943.

The number of fur farms in operation in Canada in 1943 was 6,973, and the number of animals retained on the farms at the end of the year was 219,254, comprising 74,514 silver foxes, 5,447 platinum foxes of the various types, 15,339 white marked foxes, 119,266 mink, and various other kinds which totalled 4,688 animals. The number of silver foxes decreased from the preceding year by 11 per cent, the number of mink increased by 14 per cent and the number of new-type foxes advanced by 77 per cent.

No. 188. Fri. April 6, 1945 -- Early Paper-Making in Canada

Paper manufacturing began in Canada early in the past century. The first mill in Lower Canada was established at St. Andrews, near Lachute, in 1803, and the second in the county of Portneuf in 1810. The Maritime Provinces entered the industry in 1819 with a mill built at a little distance from Bedford Basin, near Halifax. The first mill in Upper Canada was located at Crooks Hollow (now Greensville) near Hamilton, but the date is uncertain, being set by some at 1813 and by others at 1820 and 1825. At the census of 1851 Upper and Lower Canada had five mills each, and ten years later Lower Canada had six and Upper Canada five.

Until Confederation the industry was confined to the manufacture of paper from rags. Prior to 1860 no wood-pulp was used or produced anywhere. The supply of rags for paper-making is distinctly limited and the material soon became too expensive for the manufacture of cheap paper. Paper-makers experimented with fibres from the stems, leaves and other parts of numerous annual plants; but the small proportion of paper-making material recoverable from such sources led to experiments in the use of wood. Different species were tried, and finally spruce, balsam and hemlock were found to be the most suitable for manufacture of paper of the average grades, although in recent years increasing quantities of jackpine and poplar are used. Rags are still used for certain fine papers.

In 1866 Alexander Buntin installed at Valleyfield, Quebec, what is claimed to have been the first wood grinder in America and began the manufacture of wood-pulp by the mechanical process. About the same time John Thomson was successful in his experiments to manufacture paper from wood by using caustic soda to dissolve the non-cellulose components, and his employers built the first chemical wood-pulp mill in Canada at nearby Windsor Mills, where production began in 1869.

These two pulp-mills, however, are not mentioned in the census of 1871, which covers only the 21 paper mills in operation, 12 located in Ontario, 7 in Quebec and one each in New Brunswick and Nova Scotia. These paper mills had 760 employees, distributed $197,815 in wages and salaries and produced paper valued at

$1,071,651. Ten years later, in 1881, there were 36 paper and 5 pulp-mills in operation, with a total of 1,588 employees, a pay-roll of $460,476 and an output valued at $2,509,993, consisting of pulp valued at $63,300 and paper valued at $2,446,693.

During the next decade the use of wood-pulp in paper-making was extensively developed and in 1887 Charles Riordan installed the first sulphite mill in Canada at Merritton in the Niagara Peninsula. The census of 1891 shows only a slight increase in paper production, but the number of pulp-mills had grown to 24, of which 17 were located in Quebec, 3 in Ontario, 2 in Nova Scotia and one each in New Brunswick and British Columbia, and the annual value of the products amounted to $1,057,810. Although one pulp-mill was credited to British Columbia, it was not until 1909 that pulp was manufactured from wood in that province; however, a paper-mill using rags imported from Great Britain was operated near Alberni from 1894 to 1896.

No. 189. Sat. April 7, 1945 -- Development of Pulp & Paper Industry

At the beginning of the present century the output of the pulp and paper industry of Canada exceeded eight million dollars. From then until the end of the first Great War the industry increased rapidly and steadily. In 1907, the Brompton Pulp and Paper Company built at East Angus, in the Eastern Townships, the first mill in America to produce chemical pulp by the sulphate or kraft process. Many new pulp- and paper-mills began operations in the Maritime Provinces, Quebec, Ontario and British Columbia.

It was during this period that the paper industry began specializing in the production of newsprint. Reduction of the American tariff on newsprint in 1909 and a few years later the removal of all duties on this commodity hastened the migration of the American newsprint industry to Canada. In 1918 production of the pulp and paper industry reached well over 100 million dollars.

Following abolition of price control, imposed toward the end of the first Great War, the price of pulp almost doubled, and the gross output of the industry reached a peak of $236,420,176 in 1920. From 1922 to 1929 there were steady annual increases in the total value of production culminating in 1929 in a figure of $243,970,761. There were annual reductions during the next four years, but the output rose again to $208,152,295 in 1939. In that year there were 27 mills making pulp only, 49 combined pulp- and paper-mills and 24 manufacturing paper only, a total of 100 mills.

Besides the many new mills built during the 1939 period, most of the older ones added new paper machines, grinders and digesters and other equipment. In 1939 the pulp and paper industry had a daily capacity of 12,956 tons of groundwood pulp, 6,800 tons of chemical pulp, and 14,714 tons of paper. In 1939 the pulp and paper industry occupied first place among all manufacturing industries in Canada in respect of amount of capital employed and amount of salaries and wages paid. In numbers of employees and gross value of production it stood second to the sawmilling industry, and the non-ferrous metal, smelting and refining industries respectively.

During the earlier years of the present war the manufacture of wood-pulp and paper increased by leaps and bounds. The exceptional demand for pulp made necessary the installation of additional manufacturing facilities. In 1940 and again in 1941 both volume and value of production exceeded all previous levels. In 1942 and 1943 the gross value of products increased still more, but the volume of pulp and paper produced was somewhat lower than in 1941. Two factors accounted for this decrease in production; the urgent need for men for war industries and the armed services

reduced the supply of manpower available for cutting pulpwood in the forests; and the production of munitions and other war materials necessitated the diversion to new war plants in eastern Canada, and in New York State, of part of the hydro-electric power used in pulp and paper manufacture and the consequent reduction of the output of certain mills.

Despite these handicaps the Canadian pulp and paper industry supplied to the United Nations tremendous quantities of pulp, paper, and pulp and paper products, so essential for the successful prosecution of the war. The use of the products of this industry for direct war purposes may be less obvious than in some other cases, but they are many and varied.

No. 190. Sun. April 8, 1945 -- War Contribution of Pulp and Paper Industry

Wood-pulp is used extensively in the production of high explosives, such as cordite and gun cotton, replacing cotton linters at about half the cost. From the same wood, cellulose surgical dressings and hospital wadding are made to heal the wounds of the soldier. The so-called "dissolving" pulps are also transformed into rayon, celanese, cellophane and pulp-based plastics from which are produced synthetic yarns for tires and parachutes, gas-impervious clothing, impervious wrappings for intricate machines, wrappings for perishable drugs, chemicals and food, housings for radio, aircraft, artillery and navy instruments, etc., replacing cotton, silk and metals.

Paperboard is used in containers for shell cases, ammunition, gun barrels, machine parts, blood plasma, food and medical supplies, replacing metal and wood. Building board or wallboard replaces lumber in the construction of barracks, hospitals and other temporary buildings and for the finishing of ships, ambulances and aircraft.

Certain paper products are component parts of sea and land mines, of radio equipment, of shells and other weapons of war. Multiwall kraft paper sacks have replaced jute sacks in many instances. It takes three acres of blue-print paper to put into production a single bomber type of aircraft. The armed forces and the munitions industries require much paper for administrative use.

Newsprint is indispensable for the dissemination of information, and the maintenance of a free press in over forty countries has depended chiefly on the output of Canadian newsprint mills. Millions of leaflets were dropped on the enslaved countries of Europe. Large quantities of paper are required for the production of ration books, Victory Bonds, War Savings Certificates, etc., etc. Other kinds of paper, such as wrapping paper, tissues and special grades are also essential.

A special contribution to the general war effort was made by the pulp and paper industry by the adoption of a program of "bits and pieces" in its extensive and well-equipped machine shops, and the diversified list of products made includes parts for naval and cargo vessels, aeroplanes and gun-mountings, as well as guages and other special devices. During the first year supplies produced were valued at more than $1,250,000, and subsequent production has been much greater, the amount received for such work in 1943 reaching $2,012,165, which represents only a fraction of the value of the finished products, most of the materials used being supplied by the customer.

Finally, the pulp and paper industry has secured for Canada most urgently needed supplies of foreign exchange, particularly United States dollars. This function was of exceptional importance prior to the entry of the United States into the war. Through the process of foreign exchange many thousands of tons of pulp and paper shipped across the southern border reappeared in Canada in the form of training aircraft, guns, tanks and other war supplies which could not at that time be manufactured here.

No. 191. Mon. April 9, 1945 -- Imports and Exports of Paper & Products

In the early years Canada exported the products of her forests in the raw state, but through the development of her own mills and the use of new processing methods, the great bulk of Canada's forest exports, particularly in the line of pulpwood and paper, became fully manufactured. In 1943 the United States took 78 per cent of bleached sulphite exports; 82.3 per cent of unbleached sulphite; 84.4 per cent of sulphate pulp; 80.8 per cent of mechanical pulp; 97.9 per cent of screenings, and all the other pulp. Other countries which have figured in Canadian exports are the United Kingdom, Brazil, Mexico, Australia, Colombia, Peru, Portugal, Eire, Uruguay, and the British West Indies.

The importation of paper is relatively unimportant in comparison with exports but it is far from being an inconsiderable item. It amounts to $7,520,328 in 1938 and to $10,701,736 in 1943, forming about 6.7 per cent of the value of the exports of paper in both years. The United States provided practically all such imports in 1943. The greater part of the importation is made up of paper, paperboard or paper goods which have been subjected to some special process to fit them for a special purpose or consists of finished products manufactured from paper or paperboard.

Almost every class of paper or paper goods at present imported into Canada is being made in this country or could be made with comparatively little change in the equipment existing in our paper-mills and the plants of our paper-using industries, providing there were sufficient demand to warrant such manufacture.

The pulp and paper industry has shown during the war that it could maintain its production at a high level in spite of the many difficulties it has had to face - shortage of manpower and resultant scarcity of pulpwood, restrictions on the use of hydro-electric power, rationing of certain of its products, etc. The industry will be providing employment to thousands of men now on active service or working in essential war industries.

No. 192. Tues. April 10, 1945 -- Forest Resources in Relation to Pulp & Paper Industry

Canada possesses abundant supplies of the raw material on which the pulp and paper industry depends. The forested area of Canada, estimated at 1,220,405 square miles, is exceeded only by the forests of the Union of Soviet Socialist Republics and of Brazil. The productive forest area alone is given as 770,565 square miles.

According to the latest calculations of the Dominion Forest Service, the total stand of timber in Canada comprises 1,941,076,000 cords of small coniferous material, a large part of which is suitable for making into pulpwood. Of this total 1,082,879,000 cords are at present accessible. The Eastern Provinces, in which the pulp and paper industry is concentrated, account for 803,128,000 cords of this small material and British Columbia is credited with 186,286,000 cords.

If wise policies are adopted to reduce wastage through fires, insects and tree diseases, and to encourage good forest management in general, the Canadian forests can provide the raw material for large-scale production of pulp, paper and related products in perpetuity.

This country's position in the matter of hydro-electric power, which is also essential for the success of the pulp and paper industry, is just as favourable. Available waterpower at ordinary minimum flow was estimated at 25,439,000 h.p. as of December 1943; at that same date, the total turbine installation amounted to only 10,214,513 h.p. The pulp and paper industry is already the largest user of hydro-electric power in Canada; before the war it consumed about 40 per cent of the total for all Canadian manufacturing industries. Should the industry's requirements increase, there are still large sources of power to draw from.

Not only is Canada endowed with tremendous forest reserves and huge hydro-electric resources, it also has a well-organized industry to utilize these riches. The pulp- and paper-mills of Canada are advantageously located across the country, near both Pacific and Atlantic seaboards, and consequently are in a position to make economical deliveries to any part of the world. In 1943 these mills had a daily capacity of 7,599 tons of chemical pulp, 13,414 tons of mechanical pulp, 15,465 tons of newsprint and other paper and 1,772 tons of paperboard.

For the immediate post-war period, Canada's problem would appear to be not one of demand but one of supply. As restrictions on the use of paper are removed, there will undoubtedly be a steadily increasing demand for newsprint and other papers and boards throughout the world. While pulp may not be required in such large volume for explosives and other war purposes, more of it can be transformed into paper. Besides, wood-cellulose is the cheapest known product and is so versatile that it should be in great demand for a wide variety of peace time uses.

No. 193. Wed. April 11, 1945 -- The Sturgeons

Five species of sturgeon occur in Canadian waters but only one of them, commonly called the Lake sturgeon, is of any considerable commercial importance. The others are the Common sturgeon, the White sturgeon, the Green, and the Short-nosed. The family name of the five, in the scientific registers, is Acipenderidae, and the family, incidentally, goes back a long, long way in the earth's history. In the words of a Canadian naturalist the sturgeons are "descendants of a very ancient primitive stock".

In general, sturgeons are large creatures and the Lake variety is the biggest of Canada's purely freshwater fish. On the average Lake sturgeon weigh perhaps 40 pounds or so, though much heavier specimens are sometimes taken. In length the Lake sturgeon is usually less than six feet, but, of course, there are sometimes exceptions to the rule. The White sturgeon, however, which may sometimes frequent salt water as well as fresh, may run very much bigger than its lake cousin. For instance, a White which was taken in the Fraser River, British Columbia, in 1941 measured 11 feet 2 inches from the point of the nose to the tip of the tail and weighed 970 pounds. Another big fellow taken in the Fraser a season or two earlier weighed nearly 770 pounds.

Most of Canada's commercial catch of sturgeon comes from the fisheries of Ontario and Manitoba and the freshwater fisheries of Quebec, though a few are taken in the Atlantic sea fisheries, in New Brunswick inland waters, and in Saskatchewan, and some, though no large number, in the Fraser River area of British

Columbia. The bulk of the catch is made up of Lake sturgeon but the Atlantic landings include Common sturgeon and the British Columbia landings the White. The Short-nosed species and the Green are not common. As already noted, the Lake sturgeon is entirely a freshwater fish but the Short-nosed, White and Common varieties are all anadromous - that is, they spawn in freshwater but may also be sea-goers, though it is perhaps a question whether the White does not sometimes remain permanently in freshwater and whether the Common sturgeon may not sometimes spawn in brackish water. The Green sturgeon, on the other hand, frequents the sea and seldom goes into rivers beyond their mouths.

All of Canada's sturgeon landings are marketed fresh or frozen, a large part of them in the United States. In 1943, for instance, the Dominion catch was 406,000 pounds. The marketed value of the catch was $270,500, including a return of some $4,750 from the sale of caviar produced from roe of the female fish. Caviar production in Canada has so far been small-scale only and in 1943 the output was under 2,800 pounds, nearly two-thirds of it put up in Ontario and the remainder in Manitoba.

No. 194. Thurs. April 12, 1945 -- Peacetime Uses for Radar Anticipated

Some of the secrecy surrounding radar - officially described as "one of the most effective defensive weapons yet invented" has been lifted with the disclosure by the Department of Munitions and Supply that one Canadian company has produced radar and optical instruments valued at more than $200,000,000. Production figures for the plant in question - the Government-owned Research Enterprises Limited - were not broken down, but it was understood that radar equipment constituted a good percentage of the total.

Starting from scratch in October, 1940, Research Enterprises used scale photographs, but did not receive a working model from Britain until January 1941. Yet in spite of these serious handicaps, Research Enterprises was able to ship its first production unit of a radar device to the United States Navy in October 1941 - two months before Pearl Harbor.

Today the company at Leaside, near Toronto, produces some twenty major types of radar for all types of applications ranging from an anti-aircraft detection finder, containing 60,000 components and mounted on several large trucks, to a small air-borne unit for detecting submarine and land targets.

The end of the war in Europe will not, it is anticipated, stop the manufacture of this important new development of science. Widespread peacetime uses are forecast for the "magic eye" which locates moving targets despite fog, cloud, darkness or distance. After the war the Munitions Department predicts that radar may prevent airplanes from crashing into mountain sides, reduce shipwrecks and collisions, avert many railway accidents, and "eventually may render lighthouses unnecessary."

Physically radar - short for "radio direction ranging" - is a device for projecting radio waves in the direction of a target and detecting reflected waves. An exact target position is obtained by measuring the time taken for the wave to go to and from the target and the angle from which the reflected waves arrive.

Canada entered the radar picture late in 1938 when a physicist from the Canadian National Research Council was sent to England to investigate work by a group under Sir Robert Watson-Watt, now credited with the development of radar in the United Kingdom. The Dominion sought to purchase $750,000 worth of equipment,

but only two items of the order were received. Research Enterprises already had been built to produce optical glass, and in October 1940 it was decided to expand the plant for radar production.

The Munitions Department here credits radar with an important role in the Battle of Britain; in bottling up the Italian navy; in operations in Italy, Normandy, the Philippines and Iwo Jima. As a matter of fact, radar had become a "commonplace" in locating stragglers in convoy, in determining landmarks and landing fields in the dark, and checking take-offs and landings of enemy aircraft.

No. 195, Fri., April 13, 1945 -- Causes of Farm Fires

Because of the comparative isolation of most farms, an outbreak of fire is a terrifying experience to farm folk, and fire prevention is a constant thought in the farmer's mind. At the same time there is consolation in the dictum of the Fire Marshal of Nova Scotia, who has made special studies of farm fires and their origin. He says: "All fires start because of something that we do or something we have neglected to do." A study of farm fires indicates that there are at least 13 common causes for fires in rural areas. They are: chimneys of sub-standard construction; sparks from dirty chimneys; smoke pipes and stoves installed without regard to radiation of heat; seasonal grass and bush fires; spontaneous ignition of hay through dumping badly cured hay; worn-out shingle roofs; lighted lanterns; mis-use of electrical equipment; threshing operations with gasoline power; gasoline vehicles stored in barns; matches and smoking in out-buildings; trespass by thieves; and lightning.

With regard to spontaneous ignition of hay, most farmers are very careful in harvesting and storing the hay crop, but one crop of badly cured hay is a continual menace. In lubricants, spontaneous ignition does not occur, whether the lubricant is soaked in rags or not, but they burn fast when ignited. Grease, wax, and oils of vegetable origin when smeared or soaked in rags are definitely dangerous. The rags should not be allowed to lie about. If they are not disposed of by burning, they should be washed.

Gasoline has to be used, but great care should be taken, because gasoline under certain conditions is highly explosive. All filling operations should be done in daylight, and it is better to keep gasoline in a strong locked building remote from other buildings. Plenty of ventilation at floor level and above is necessary. A gasoline container should never be over-filled. Gasoline expands and forces its way outside the container.

For fire prevention on the farm it is recommended to have a roof ladder always at hand. Keep a few water buckets full and ready for use; also it is good to have a few barrels of water ready for instant use. Keep at least one standard $2\frac{1}{2}$ gallon soda acid fire extinguisher on the premises. In winter, keep the water buckets and fire extinguishers in a warm place.

No. 196, Sat. April 14, 1945 -- New Drug Saves Amputations

How a tiny metal tube, and a Canadian-developed drug named heparin have enabled front line surgeons of the Canadian Army to save many arms and legs from amputation, is revealed by the Department of National Defence.

The tube, tucked into the open ends of a severed artery and securely tied in place, makes it possible to maintain emergency circulation for days in the part of the limb beyond the injury. The limb can thus be saved, literally, "from certain death" until such time as a lessening in the stream of casualties, and an improvement in the general condition of the wounded soldier permit the surgeon to perform the tedious operation necessary to effect permanent repair.

Heparin, which made this limb-saving technique possible, is a substance derived from liver and used to prevent the coagulation of blood. Until Canadian research doctors at Connaught Laboratories, Toronto, succeeded in purifying heparin, blood clots, forming at the juncture of the tube and artery, made this new technique too impracticable for front line use.

To fully appreciate the value of this development is should be remembered that when an artery is severed all that part of the limb beyond the injury is cut off from its blood supply. Flesh cannot live without blood, and - unless something has been done quickly to restore circulation - degeneration will be so far advanced in a matter of hours as to demand amputation. During the last war, for example, countless hundreds of amputations were made necessary by wounds which, though trifling in themselves, had resulted in the severance of an artery.

In repairing arteries severed by war wounds the surgeon's task is greatly complicated by the added problems of infection and shock. The wounded man is usually in no condition to stand the prolonged operation necessary to splice or sew together the severed artery, nor has the front line surgeon, swamped with incoming casualties, the time to spare for such an exacting job. Yet, to leave the limb, with the artery tied off and circulation at a standstill beyond the wound, would be to invite decomposition, gangrene and eventually - amputation.

Today, however, with heparin to prevent blood clotting, the blood supply can quickly be restored by inserting the ends of a metal (occasionally glass) tube into the open ends of the severed artery. After an interval of a few days, during which time the wounded man's shock has been countered by penicillin or sulpha drugs and the rush of casualties has dwindled, the surgeon can tackle the painstaking job of permanent repair under conditions much more favourable to successful recovery. To do this, he has but to tie off the artery on both sides of the wound, remove the tube and sew together the severed ends - or - if a piece of the artery has been completely torn out, fill in the resulting gap by splicing in a section of vein taken from another part of the patient's limb. To prevent coagulation at the junctures of the newly grafted section, heparin is continued until the wound is completely healed.

The idea of using metal tubes as emergency "connectors" for severed arteries was introduced by a French surgeon, Marin Theodore Tuffier, 1857-1929. Clotting occurred in these early attempts, however, so the period of useful function was too short to be of much practical value. It was not until Canadian research doctors succeeded in purifying heparin and developing it to its present effectiveness, that clotting problem was overcome and the new technique, which has done so much to keep down the number of Canada's war amputation cases, finally perfected.

No. 197. Sun. April 15, 1945 -- Cutting Farm Woodlots

There are two main reasons why certain trees in established woodlots and shelter-belts should be cut down and made use of before they die. These reasons are; wood of trees that have died has less value as fuel than wood of trees cut

green and properly dried or seasoned, and, nothing is to be gained by leaving in established woodlots and shelterbelts trees which are at a standstill, so far as further development is concerned. In the case of shelterbelts, if the value of trees is providing adequate shelter is impaired, it is sound economy to arrange to set out a new shelterbelt prior to removing the old trees. Woodlots and shelterbelts should be thought of as farm crops yielding a harvest within more or less definite periods, and, as such, new crops must be started occasionally.

Management of any woodlot or shelterbelt does not call for cutting the whole planting at one time. The recommended plan is that only those trees which are definitely the weakest or those which reduced growth has rendered easy victims to disease or insect attacks, should be cut at intervals of about five years. The growth of the remaining trees will be stimulated.

This thinning out may be done at any convenient season of the year, but, having in mind the best use of the removed material, two specific periods are suggested. Trees intended for fuel only should be removed in the fall or winter, so that the wood in trunks and branches may dry out in summer and be ready for burning in the following winter. A second suitable time is early spring when poles intended for fence posts are best cut before the spring movement of sap begins. Where the poles are to be treated with bluestone or other "green-cut" treatment, cutting in the early spring is essential for best results.

No. 198. Mon. April 16, 1945 -- Soy Flour Keeps Navy Bread Fresh

Bread, one of the main foods in civilian and service diets has long played an important part in feeding men at sea at regular meals and snacks in between. But because of moisture and difficulty in providing proper storage space on ships, it has been the problem food of the navy for centuries. Enhanced by the addition of vitamins and calcium, freshly baked bread would develop a mould after four days or so at sea, and in a short time was inedible.

From now on sailors on Canadian ships will have bread that is fresh even after periods of 19 days at sea and longer. This new type of bread has been developed by navy bakers after experiments carried out over a period of six weeks at the Royal Canadian Naval bakery at Halifax. The new magic substance they have proved will keep bread fresh at sea for long periods is the flour of the versatile soy bean.

Hearing of the addition of soy flour to give added nutrition to bakery products, the navymen worked on the possibility that the flour would also prolong the keeping qualities of bread. After many tests and experiments they found the right mixture of the flour to keep the bread fresh for a long period and at the same time give a richer flavour and a higher nutritional value.

Warrant Cookery Officer, Alexander S. Jarvis, R.C.N.V.R., London, England, was in charge of experiments leading to the discovery, and working with him were Petty Officer Cook Allan Stanhope, Petty Officer Cook Clary Mayland, who both in civilian life had their own bakeries in Halifax, and Leading Cook Sidney Crowe, who was a baker in Truro, N. S. and Halifax before joining the navy.

'The four men found that the addition of 8 per cent soy flour in the usual bread mixture with a small decrease in the amount of shortening gave the best results in keeping qualities, taste and colour. The bread was kept for long periods in the bakery in a temperature varying from 70 to 80 degrees and kept for periods of at least 14 days at that warm temperature before the appearance of any mould. Simi-

lar tests were conducted on a frigate at sea and on return to port the bread was in good condition without any signs of mould after 19 days. The bread stayed fresher at sea than it did in the bakery.

The men in the Halifax bakery are now working on cake mixtures to determine what proportions of the soy flour will keep cake fresh at sea.

No. 199. Tues. April 17, 1945 -- Tomatoes Contain Much Vitamin C

The outstanding value of the tomato in nutrition is due largely to its vitamin C (ascorbic acid) content. On the average, a fresh ripe summer grown tomato should contain about 25 milligrams of vitamin C in each $3\frac{1}{2}$ ounces of whole tomato. One small tomato would supply around one-third of the recommended daily adult allowance of vitamin C. Four to $4\frac{1}{2}$ ounces of properly canned tomatoes or tomato juice would supply a similar amount. However, analyses of tomatoes from different sources show that they vary widely in their vitamin content.

The variation in vitamin C content of tomatoes depends on several factors, notably variety. If a variety of high vitamin content is grown beside one of low content in several different areas of the country and under varying seasonal conditions, the vitamin content may vary considerably in both varieties but they will always keep the same relative position to each other. That is, the same variety is always the high one.

Climate, that is, heat and especially light, can greatly modify the vitamin content of any variety. Dull, cool rainy weather, particularly at ripening time, results in fruit of low vitamin content. Tomatoes harvested late in the autumn tend to be low in vitamin content. Also those grown under glass during the winter months have only about one-third the vitamin C content of summer grown tomatoes.

Fertilizers appear to have little effect on the vitamin C content of tomatoes although they have a sharp effect on the yield. Neither does the soil seem to play much of a role so far as vitamin content is concerned.

In experiments conducted at the Experimental Station, Summerland, the following varieties were found to have a high vitamin C content; Signet, Clark's Early, Sugawara, Earlina 8040, Master Marglobe and Stokesdale. Of these varieties Clark's Early and Sugawara are grown extensively in the Okanagan Valley and adjacent areas. Earlina 8040 is an early maturing variety suitable for use in short season districts, whereas Master Marglobe and Stokesdale are comparatively late maturing varieties requiring a long growing season.

Signet is a Summerland Station introduction which, in addition to having exceptionally high vitamin C content, has excellent colour and flavour. It is a heavy yielder, the fruit commencing to ripen early and continuing to mature over a long season. The comparatively small size of the fruit is a disadvantage from the commercial canning standpoint, but Signet is rapidly becoming popular as a home-grown variety. It is being used in breeding work in an effort to produce a variety combining larger sized fruit with the superior yielding ability, colour, flavour and vitamin C content found in Signet.

No. 200. Wed. April 18, 1945 -- Birthplaces

The proportion of the Canadian born to the entire population has declined during the 70 years from 1871 to 1941. Whereas in 1871, 83.3 per cent of the total

population were Canadian born, 14.06 per cent other British born, and 2.64 per cent foreign born, the corresponding proportions in 1941 were 82.46 per cent, 8.72 per cent and 8.82 per cent, respectively.

The smallest element in the population, that is, the foreign born other than United States born, actually shows the greatest percentage increase. These other foreign born increased rapidly from 0.85 per cent in 1871 to 7.50 per cent in 1931, more than doubling in absolute numbers from 1901. Declines in the group in 1921 and 1941 are attributable to restricted immigration policies.

Of the total population in 1941, 4,794,439 or 81.25 of the males and 4,693,-369 or 83.72 per cent of the females were Canadian born.

A comparison of the proportions Canadian born in 1911, 1921, 1931 and 1941, shows that with minor exceptions the provinces stand in approximately the same rank at all four census dates. In the east the proportion Canadian born was only slightly smaller in 1931 than in 1921. In Ontario it was considerably smaller. From Manitoba west, on the other hand, the Canadian born constituted larger proportions of the population of every province. The explanation of these differences seems to be threefold: (1) emigration of native Canadians during the decade was relatively heavier in the Maritimes than in the other provinces; (2) a radical change occurred in the direction of current immigration from abroad, larger proportions going to the central provinces (particularly Ontario) than formerly, and smaller numbers settling in the agricultural west; and (3) the high fertility of earlier immigrants coupled with their relatively large numbers resulted in a great increase in the Canadian-born children of the foreign stocks in that part of the Dominion lying between the Great Lakes and the Pacific Coast.

In contrast with the Canadian born, the proportion of other British born to total population shows an increase in Western Canada between 1911 and 1921. The very high proportion of British immigration that British Columbia has received is reflected in the figures. During the decades ended 1931 and 1941, notable declines have occurred in the proportions of the British-born populations of all four western provinces due again to the cumulative effects of curtailed immigration.

As in the case of the British born, persons of foreign birth still constitute very small proportions of the population in Quebec and the Maritime provinces but a change is now taking place in all five eastern provinces where the proportions have shown a consistent increase over the past forty years. In Western Canada the trend is just the reverse although the percentage of foreign born is still large in the case of each of the provinces west of Ontario.

No. 201. Thurs. April 19, 1945 -- Home Grown Seed

Many farmers are of the opinion that seed obtained from some other district or from some other soil, or both, is likely to give better results when sown on their farm than may be expected from their own home grown seed. In Eastern Canada many farmers believe that seed brought from Western Canada is not as desirable as their own while others contend that the reverse is the case.

These opinions, no doubt, are based on experiences obtained when introducing new seed. Conditions may have either favoured or hindered the best development of the crop produced from such seed or a better adapted or less well-adapted variety may have been used. The results realized usually determine the conclusions drawn although these may often be quite faulty.

The Dominion Experimental Farms situated as they are in every province of the Dominion, have a particularly good opportunity to investigate matters of this kind and full advantage has been taken of this fact.

A few years ago the Cereal Division carried out an extensive experiment whereby seed of Vanguard oats grown continuously at certain Branch Experimental Stations would be used in comparing seed of the same variety brought in from the other stations annually. This work was conducted at the Experimental Farms at Nappan, N. S., Ste. Anne de la Pocatiere, P. Q., Ottawa and Brandon, and the Experimental Station at Beaverlodge, Peace River District, Alberta. All plots were sown in quadruplicate and were carefully operated in order that reliable information on yields might be obtained.

The tests were continued for three years at the end of which time the information obtained did not indicate that there would be any advantage or any disadvantage in bringing in seed from these outside points. If the seed brought in had belonged to some other variety and not so well adapted to the conditions when sown, the results of course might have been quite different.

A similar test was conducted at the farms and stations and during the same years with Regent wheat and O.A.C. 21 barley and here again the conclusions drawn were the same.

All seed used in these tests was, of course, thoroughly cleaned and graded so there could be no possibility of differences arising due to variation in the quality of the seed used. These tests and many others that have been conducted since the Experimental Farms were organized in 1886, have clearly shown that where the seed used is clean, well-graded, and belongs to a variety which is well suited to the district that it does not make a great deal of difference whether the seed is obtained at home or whether it is brought in from some other point. The importance of using good seed of the varieties found to be well adapted to the conditions where grown continues to occupy first place.

No. 202. Fri. April 20, 1945 -- Paint

We need only to look about us to obtain an impression of the importance of colour in our daily lives. Everything seen by the human eye is coloured and every sensation of colour owes its reality to light. Nature has garbed her creatures with a lavish range of beautiful tints and shades, while man, taking his cue from nature, has dipped in to nature's treasure trove and has created shades and hues of colour that rival even nature's best. Thus we have paint.

Paint is one of the world's most widely used commodities and practically every civilized country produces it in some form or another. The purpose of painting, of course, is to preserve and embellish a surface. Prehistoric man employed paint for ornamenting the body, living or dead, as well as for ritual and decorative designs. White lead is used as a base in many common oil paints and with pigments added an ample colour range is obtained.

Canada has a highly developed paint industry with a total output valued at well over forty-five million dollars in 1943, having grown by leaps and bounds since the turn of the century when the value of paints produced was in the neighborhood of three million dollars. The number of plants engaged in the manufacture of paints has also increased, totalling 96 in 1943 as compared with 18 as recorded in the census of Canada in 1901.

Some of the more important raw materials used by Canadian paint manufacturers include white lead, lithopone, asbestine or talc, barytes, whiting and a wide range of other pigments, colours, fillers and extenders. Amongst the dryers, oils and solvents used are linseed oil, turpentine, petroleum, distillates, ethyl acetate, amyl acetate. The total value of raw materials used in the process of manufacture in 1943 aggregated $22,755,000.

The large bulk of the paints manufactured in the Dominion is used in Canada, but we have an excellent export trade in this commodity. We also import some from abroad. The reconstruction of Europe constitutes an enormous potential demand for paint, although, as paint is produced in every country in Europe, no doubt local products will be used extensively wherever possible. The countries that have escaped damage to their homelands, but whose normal reconstruction has been retarded by lack of materials will probably also provide good markets for paint products.

No. 203. Sat. April 21, 1945 -- Fuel Supplies of Canada

The fuel situation in Canada has always demanded the serious consideration of the authorities. The country is in a somewhat anomalous position in that large deposits of coal are located in the eastern and western provinces, but no coal is mined in Ontario and Quebec, where the greater number of Canadian manufacturing industries are located and denser populations exist. For that reason, coal must be brought into these central provinces, chiefly from the United States. Supplies of anthracite coal, formerly brought in from Great Britain in substantial amounts, have been practically cut off because of the difficulties in ocean shipping during the war. Production of coal in Canada totalled 17,859,057 tons in 1943 and 17,118,008 tons in 1944.

Natural gas has been found in most of the provinces of Canada. It is produced commercially in abundance in Alberta, to a lesser extent in Ontario, and in small quantities in New Brunswick and Saskatchewan. In Alberta, most of the production comes from the Turner Valley field, which supplies fuel for the field itself and then feeds the pipe line to the cities and districts of Calgary and Lethbridge. In Ontario, natural gas is produced only in the southwestern part of the province and is piped to several cities and towns for industrial and domestic consumption. The all-Canada output of natural gas in 1944 amounted to 45,956,800,000 cubic feet as compared with 44,198,005,000 in the preceding year.

Crude petroleum production from sources in Alberta -- Canada's chief oil-producing province -- showed a decrease in 1944 as compared with the preceding year, but new wells drilled in 1943 in the Fort Norman area of the Northwest Territories have afforded an important and increased supply of petroleum products for transportation and other purposes to the remote and growing population of northwestern Canada. Crude oil from these wells is also transported by pipeline to a refinery at Whitehorse, Yukon. Some crude petroleum is produced in Ontario and, in minor quantities in New Brunswick. Production of crude petroleum in Canada in 1944 amounted to 10,071,000 barrels as compared with 10,052,000 in 1943.

No. 204. Sun. April 22, 1945 -- Buckwheat

The status of buckwheat as a farm crop in Eastern Canada varies somewhat in different districts. In Ontario, where a wide variety of cereal crops are grown, buckwheat does not occupy more than three to four per cent of the area in cereals. In Quebec, buckwheat assumes a greater importance, while in New Brunswick it occupies

eight to 10 per cent of the area in grain crops, says an official of the Central Experimental Farm, Ottawa.

The grain is important commercially having long been considered excellent food both for human beings and for animals. Buckwheat flour is frequently combined with flours of other grains to make a pancake flour mixture. As a food for livestock buckwheat is regarded as almost interchangeable with barley.

Two types of buckwheat are grown. The Smooth Hulled type which includes the common varieties, Japanese and Silverhull, and the Rough Hull which includes the varieties Rye and Red Stem. In Ontario and Quebec, the smooth hulled types are generally grown, as these are used for both livestock feed and milling. In New Brunswick, considerable of the rough hulled type is grown. Generally speaking the rough hulled type, particularly the Red Stem variety, will outyield the smooth hulled type. It is considered to be able to withstand periods of high temperatures and drying winds, which, when they occur at blossom times, cause buckwheat flowers to become blasted and barren.

Buckwheat is valued for its ability to produce a fair yield on land where wheat and even rye cannot be grown with profit. It appears able to extract plant food from the soil that is not available to other crops. It makes a heavy growth and when ploughed under decays very quickly and completely thus constituting an excellent soiling crop. Its quick germination and rapid growth also give it excellent advantages as a weed destroyer.

As a wartime crop, buckwheat provides an opportunity for greater division of labour and better use of farm equipment. No extra machinery is required to handle the crop. Seeding is best delayed until the latter part of June so that the blossoming period comes in the cooler weather of late summer. Harvesting, likewise, takes place later, usually in September and in this way the crop may be handled during the more or less idle part of the season.

According to figures compiled by the Dominion Bureau of Statistics the production of buckwheat in Canada in 1944 amounted to 5,553,000 bushels with a gross farm value of $4,416,000. The area sown to buckwheat in 1944 was 256,000 acres.

No. 205. Mon. April 23, 1945 -- Grapes

Grape culture had spread to all the lands of the Mediterranean and tc southwestern Asia centuries before the Christian era. Of the many species known today, only one, the European or vinifera grape, was familiar to the ancients and to the Europeans of the Middle Ages. When grapes were brought to North America they were first established on the West coast of what is now the United States where conditions of both soil and climate were similar to those of southern Europe. Attempts to grow the vinifera type grape in eastern United States at first were not successful. The grape industry only became established in this area when plant breeders produced improved varieties of the native or labruska types and successfully crossed them with the vinifera.

The countries bordering the Mediterranean constitute the world's greatest grape-producing region. In North America the important vinifera grape-producing region is in California. In eastern United States, as in Canada, the grapes grown are of the labrusca or slipskin type. In the Southern Hemisphere there are three important and widely separated grape producing regions - Australia, Southern Africa, and Chile-Argentina.

Grapes grown in the Northern and Southern Hemisphere ripen in opposite seasons. Although this has little or no effect upon the marketing of raisins and wines both of which are produced from the grape and which are not perishable commodities, it serves to extend the international marketing season for fresh table grapes to the entire year. The table grapes of the one hemisphere, however, scarcely compete with those of the other.

Grapes have a variety of uses, chief of which are: consumption as fresh fruit, drying into raisins and currants, and manufacture of wines and brandies. In addition, there are several minor outlets, such as canning and the manufacture of jellies and preserves and of non-alcoholic grape juice.

Ontario and British Columbia are the vineyards of Canada. Last year these two provinces produced 60,235,000 pounds of grapes, of which Ontario accounted for 57,-340,000 pounds. The value of the crop was $2,247,000.

No. 206. Tues. April 24, 1945 -- Forest Production -- 1

Total forest production of Canada in 1943 involved the cutting of 3,079,782,000 cubic feet of standing timber, of which 34.2 per cent was taken out of the woods in the form of logs and bolts chiefly for the production of lumber, 33.4 per cent as pulpwood and 28.4 per cent as firewood. The remaining four per cent consisted of forest products in various other forms. To this must be added the volume of merchantable material destroyed by fire, 51,435,000 cubic feet in 1943, and the annual destruction by insects and tree diseases - about 700,000,000 cubic feet, so that the drain on our forest resources in 1943 was approximately 3,831,217,000 cubic feet. About four-fifths of this was used and one-fifth wasted.

According to the latest available estimates, Canada possesses 388,550 million cubic feet of standing merchantable timber, of which 239,157 million are considered to be accessible to commercial operations. This accessible timber consists of 252,-100 million ft.b.m. of saw timber and 1,685 million cords of smaller material suitable for pulpwood, fuel and other products. The area of productive forest land in Canada is estimated to be 770,000 square miles, of which 430,000 square miles are accessible. Practically all of the recorded depletion takes place in the accessible portions of the forest.

Replacement of depletion during the period 1933-42 required an average annual growth rate of about 14 cubic feet per acre on the accessible productive forest area. The actual growth rate of Canada's forests is not known, but from the data available it would seem that a rate of depletion in excess of the recent average may result in a decrease of the growing stock - under present methods of forest management. Even if total depletion is replaced by total growth, under more intensive methods of management, the very large old trees still being cut in the remaining virgin forests will not be replaced, because their production would require several hundred years. This means that industries depending on very large timber must be prepared to adapt themselves to the use of smaller logs when the ancient giants of the forest have all been felled.

In the few years preceding 1940 a combination of relatively favourable weather conditions and improvements in methods of detecting and fighting forest fires tended to reduce fire losses in Canada as a whole, although the number of outbreaks remained about the same. In 1941, periods of dry weather, the enlistment of key personnel of fire-protection organizations, and shortage of labour available for fire fighting because of high employment in war industries resulted in severe losses in several of

the provinces. Under such circumstances, full co-operation by the public in prevention of forest fires becomes a significant duty in connection with national defence.

While war continues against Japan the demands on our forests will inevitably remain at a high level. Although production of newsprint has been somewhat curtailed it continues to be an important commodity in our export trade, and demand for other papers and for wood pulps is strong both at home and abroad. Canadian lumber is needed in vast quantities by ourselves and our Allies. Wood has been proved, under war conditions, to be the most versatile of materials, and is constantly being substituted for other materials which are in short supply.

No. 207. Wed. April 25, 1945 -- Forest Production -- II

As far as value is concerned, pulpwood was the most important forest product in Canada in 1943 with a total of over one hundred and ten million dollars. Logs and bolts, with a total value exceeding ninety-nine million dollars came second on the list; firewood came third with more than forty-five million dollars. Round mining timber, poles and piling, posts and hewn railway ties came next in order of importance for value. The total value of all these forest products in 1943 was $268,615,283.

On the basis of equivalent volume of standing timber, we find that logs and bolts headed the list in 1943 for the Dominion as a whole. Pulpwood was the next most important item; firewood came third; fence posts were next on the list. The other important forest products from a volume standpoint were hewn ties, fence rails, round mining timbers, wood for distillation and poles and piling.

The province of Quebec headed the list for volume of forest production and led in quantity production of pulpwood, firewood and fence rails; it was tied with Ontario for wood for distillation and came second on the list of provinces for quantity production of logs and bolts and fence posts, and third for hewn ties. Ontario was the second most important province for volume production, coming first for round mining timber and poles and piling and sharing first place with Quebec for wood for distillation; it held second place for pulpwood and firewood and came third for logs and bolts. British Columbia headed the lists for logs and bolts and hewn ties and came second for poles and piling. New Brunswick came second for hewn ties and round mining timber, and third for pulpwood production. Nova Scotia came third for fence rails. Alberta was the most important producer of posts, and came second with regard to fence rails and third for round mining timber. Saskatchewan came third for firewood and fence posts. In Manitoba, firewood, logs and bolts, pulpwood and posts were the most important items. Finally, in the province of Prince Edward Island the greatest volume of forest production consisted of firewood, logs and bolts and fence rails.

No. 208. Thurs. April 26, 1945 -- Wartime Program for Milk in Britain

Farmers in Great Britain and Northern Ireland have managed to avoid a serious decline in milk production since the beginning of the war by their response to a governmental wartime program that gave milk first place among foodstuffs because of its vital place in the national diet. The United Kingdom consumes more fresh milk at present than at any other time in the history of the country. In fact, the present rate is 35 to 40 per cent above pre-war level.

Dairy herds have been substantially increased, but it has not been possible to maintain normal output per cow. Producers have been seriously handicapped by a shortage of skilled labour, a decline in imported feedstuffs of approximately 6,000,000 long tons (2,240 lb.) and the ploughing up of 7,000,000 acres of grassland. The shortage in feedstuffs has only been partially relieved through a diversion of supplies from pig and poultry producers to dairy farmers, and by rationing in proportion to the milk sold.

The Milk Marketing Board now purchases all milk directly from producers, with payments varied according to region of production. The Board sells the milk to the Ministry of Food at prices prescribed by the latter, grade differentials being based on quality tests conducted by the Ministry of Food. Finally the Ministry of Food sells the milk wholesale to distributors and manufacturers, again at controlled prices that are uniform regardless of how the milk is used.

Larger quantities have been made available for consumption in the original form by the diversion of milk to fresh use from other uses that could be dispensed with or met by imports more easily than by domestic production. Part of the milk formerly utilized in the production of butter and cheese, for example, has been channelled into the fluid trade. The manufacture of cream and ice-cream has been prohibited, and the quantity of skim-milk fed to live stock has been drastically reduced.

To encourage farmers to produce the increased quantity of milk likely to be required during the next four years, the government guarantees prices up to the summer of 1948 at not less than the prices now prevailing.

No. 209. Fri. April 27, 1945 -- **Facts of Interest**

Although Canada produces both fibre flax and flax for oil, the principal production is flaxseed for oil. This crop was produced extensively in Western Canada when the prairie regions were being opened up for settlement prior to the first Great War. More than 2,000,000 acres were planted to flaxseed for oil in 1912 and a crop of more than 26,000,000 bushels was produced. This proved to be the peak for both acreage and production until wartime developments necessitated the expansion of acreage in 1943, although production fell short of the 1912 crop despite greater seed acreage. The acreage seeded to flaxseed in 1943 was 2,947,800, falling to 1,323,100 in 1944. Production in 1943 was 17,911,000 bushels and in 1944, 9,668,000 bushels.

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The production of paper in Canada dates from 1803, but very little information is available concerning this industry until the beginning of the present century. Paper made chiefly from rags and without labour-saving machinery was an expensive commodity. On the basis of census figures, the production of paper does not appear to have exceeded 10,000 tons in 1871. At the close of the 19th century, however, the production of paper and "cardboard" - as it was then called - appears to have been close to 100,000 tons. By 1917, when accurate statistics of paper production were compiled for the first time, the output of paper of all kinds totalled 856,000 tons. In 1941 a high record was established at 4,525,000 tons, but decreases in 1942 and 1943 brought the figure down to 3,966,000 tons.

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Some authorities suggest that barley is the oldest of all cultivated cereal crops. At one time it constituted an important part of the diet of people of

southern Europe, but like oats it has been largely a feed grain for live stock in Canada during the history of grain growing in the Dominion. A small percentage of the Canadian barley crop goes into the production of malt products, and some is consumed as human food, chiefly in soups, but the crop as a whole is considered a feed for live stock and its use in Canada has greatly expanded with the growing hog population of the present war period. Production in Canada in 1944 amounted to 194,-712,000 bushels as compared with 103,147,000 in 1939.

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Canada has been exporting rye in varying amounts since Confederation. As early as 1882 more than 1,000,000 bushels of Canadian rye were exported but the period of greatest export was between the two wars. During the second World War most of the rye exported from Canada has found its way to the United States, but in normal times Canadian rye would be exported to several European countries. It is apparent from Canadian statistics, however, that a large part of the rye crop produced in Canada never leaves the farms. Some of this is consumed as live stock feed but doubtless a good deal also disappears as food in the homes of farmers who came to Canada from European countries where rye flour was heavily consumed.

No. 210, Sat. April 28, 1945 -- Facts of Interest

The trapping of wild fur-bearing animals has a definite place in the pages of Canada's earliest history. In those days it was the practice of trappers to keep foxes caught out of season alive until the fur was prime. This custom was the beginning of the modern industry of fur farming. In 1912 and 1913 the Dominion Commission of Conservation conducted an exhaustive inquiry into the history and possibilities of fur farming in Canada, and the resulting information gave an impetus to the industry. Preliminary figures record a total of 6,973 fur farms in the Dominion in 1943, and the revenue from the sale of live animals and pelts had a value of $9,846,000.

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Canada has a wealth of water-power resources favourably distributed throughout the country in relation to other natural resources, to centres of population and to transportation facilities. Since the turn of the present century, water-power development has had a profound effect upon the national economy. This development, increasing from a total of 173,000 h.p. in 1900 to more than 10,283,000 h.p. in 1944, has been the mainspring of the great industrial expansion of the past four decades and has brought to the greater part of the population the amenities of electric lighting and other electric services.

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In 1866 Alexander Buntin installed at Valleyfield, Quebec, what is claimed to have been the first wood grinder in America and began the manufacture of wood pulp by the mechanical process. About the same time, one John Thomson was successful in his experiments to manufacture paper from wood by using caustic soda to dissolve the non-cellulose components, and his employers built the first chemical wood pulp mill in Canada at Windsor Mills, where production began in 1869. At the beginning of the present century the output of the pulp and paper industry of Canada was valued at about $8,000,000, increasing to $137,913,000 in 1919. In 1943 the value reached a new high peak of $345,653,000.

No. 211. Sun. April 29, 1945 -- Facts of Interest

Canada's list of food fishes embraces nearly 60 different kinds, chief among which are salmon, herring, cod, lobster, whitefish, halibut, sardines, haddock, pilchard and pickerel. The total quantity of fish of all kinds taken by Canadian fishermen in 1943 was 12,352,898 cwt., for which fishermen received, at the point of landing, a total of $49,031,781, compared with a catch of 11,233,710 cwt. with a landed value of $41,734,723 in the preceding year.

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Six telegraph systems are operated in Canada, five in conjunction with the railways and one small system that is owned and operated independently. One United States company operates lines across Canadian territory; one private Canadian company operates a wireless system; and three cable companies, in addition to the telegraph companies, operate cables from Canadian stations. In all, 22 cables are operated between Canada and England, Azores, Australia, New Zealand, Newfoundland, St. Pierre and Miquelon, and Bermuda, and two cables between North Sydney and Canso, N. S. These systems operate 378,931 miles of telegraph wire in Canada, 5,419 miles outside of Canada, and 32,805 nautical miles of submarine cable between Canada and other countries.

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The making of barrels is divided into two divisions - slack and tight cooperage. Slack cooperage, or barrels made with comparatively loose seams, for the shipping of dry products such as lime, potatoes, apples, dry fish, flour, cereals, nails and other products which do not require a water-tight container, is probably the most important. Tight cooperage includes the manufacture of water-tight barrels only. These are mostly used for containing liquids, such as syrup, cider, vinegar and oil. These are also used for pork and fish packed in salt or brine. Elm, poplar, maple, spruce, beech, ash, basswood, birch and pine are a few of the woods used in the making of barrel staves. The gross value of products manufactured by firms included in the cooperage industry of Canada in 1942 was $4,103,000 as compared with $2,197,000 in 1939.

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Canadian production of chromite is relatively small and is far short of domestic requirements. The world production just prior to the war was about 1,300,000 tons. Russia, Turkey and Southern Rhodesia were each producing 200,000 tons or more a year, while South Africa, the Philippines, Cuba, New Caledonia, Yugoslavia, Greece and India were each producing 50,000 tons or more. When it was evident that shipping difficulties might impede the imports of chromite into Canada, steps were taken to encourage production from the known deposits in Quebec. Chromite is used in the manufacture of refractory brick, as ferro-chrome in the manufacture of certain ferrous alloys, and in the metallic form in certain non-ferrous alloys. Production in Canada rose from 335 tons in 1940 to 27,720 tons in 1944.

No. 212. Mon. April 30, 1945 -- Facts of Interest

Modern cement-making is an industry, really an art, which was lost for ages but rediscovered in the middle of the 18th century by the famous Scottish engineer Smeaton who built the first Eddystone Lighthouse that withstood the stress of wind and sea. The Egyptians, the Carthaginians and the Romans all knew about cement and used it. The Pyramids are a proof of this fact. When the glory of Rome faded, cement-making seems to have vanished utterly and later builders were nonplussed to

duplicate the enduring structures of the ancient architects until Smeaton, looking for some substitute for lime mortar which would set hard under water, hit upon it by burning impure limestone mixed with clay. Portland cement first appeared in 1824. An English stone mason, Joseph Aspdin, made it. His cement was called Portland because it bore a fancied resemblance to building stone quarried on the Isle of Portland. The production of Portland cement in Canada in 1943 amounted to 7,302,000 barrels, as compared with 4,509,000 in 1936 and 12,284,000 in 1929.

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Canadian sandstone has been utilized extensively in the construction of many important public buildings in Canada and is favoured as a material in the construction of the better type home. The rock occurs in Canada in a variety of colours, including white, reddish brown, yellow and grey. Shipments of sandstone were made in 1942 from quarries located in all of the provinces with the exception of Prince Edward Island, Manitoba and Saskatchewan. The greater part of the crude output in 1942 was employed as rubble and riprap and in the crushed state for concrete; highway construction and railroad ballasting. Sandstone in British Columbia, New Brunswick and Nova Scotia has been employed in the manufacture of abrasive wheels and sharpening stones. Considerable tonnages of Canadian sandstone are also employed as flux in the smelting of ores.

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The Chinese were the first to discover a practical method of paper making by the weaving of fibres. They made paper first on coarsely woven cloth moulds and later with moulds of thin, parallel bamboo strips, held in place by silk threads. The Arabs of Samarkand acquired the art from the Chinese, and they were followed by the Persians. The Moors introduced it into Europe in the 12th century via Spain, whence it was carried into Italy, France, the Netherlands and Germany. Paper making was begun in England in 1492, but apparently died out until reintroduced nearly a hundred years later. It did not become firmly established there, however, until the closing years of the 17th century. The production of paper in Canada dates from 1803. In 1917, when accurate statistics of paper production were compiled for the first time, the output totalled 856,000 tons. In 1943, the production was almost five times that figure.