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THE COMPETITIVE POSITION OF THE DAIRY INDUSTRY OF CANADA . . .

by

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THE COMPETITIVE POSITION OF THE DAIRY INDUSTRY OF CANADA

Introduction and Summary:

So vast are the resources for dairying in Canada that there is little apparent relation between the physical possibilities of expansion on the one hand and on the other the very moderate gradual increase now in progress in volume of dairy production and an actually declining national surplus of dairy products. With a slightly greater total area than that of continental United States, Canada has developed a dairy industry at present little more than one-tenth as great as ours. This is due to the comparatively large proportion of Canadian lands that is unsuitable for agricultural use and to the sparse settlement and lack of development of a dairy industry in much of the potential dairy lands.

The key to this situation apparently is to be found in the persistent tendency of Canadian farmers to utilize the agricultural resources of the country in the maximum production of grain and meat, resorting to dairying only under economic pressure, and along with this more or less extensive agriculture, a rapid industrialization of the country as a whole with its attendant growth in domestic demand for the Canadian output of dairy products.

Like Canadian agriculture generally, dairying is still extensive rather than intensive in its character. Growth of the dairy industry in most sections of the country is as yet brought about more largely through expansion of farming area and increased numbers of cows milked than by means of any marked tendency toward general improvement in yield per cow. In fact, a considerable part of Canadian dairying is carried on as more or less supplementary to wheat and beef production, tending to increase when returns from these major branches are unsatisfactory and to decline with prosperity arising from them. This is particularly significant in the prairie provinces where general purpose cows are milked and the milk utilized chiefly in butter-making.

Approximately two-thirds of the land area of Canada that is suitable for agricultural use is still unoccupied. Notwithstanding such lack of development of potential dairy lands, the exportable surplus of dairy products continues to be absorbed increasingly by domestic consumption. Competition from Canadian dairying has been and will continue to be affected predominantly by the progress of industrialization within that country, for it is this industrial development that is serving to widen Canada's domestic market for milk and its products. In this respect it appears that the history of Canada is following a course similar to that of the United States, and that the stage now reached in Canada corresponds roughly to that of a generation earlier in this country.

By the time the exports of butter and cheese from the United States had reached their peak in the early eighties, Canada was exporting increasingly important quantities of dairy products, principally cheese. About 25 years ago the exportation of Canadian cheese began to decline. More recently very important quantities of fresh cream and of milk, fresh and preserved, have added to the value of the Canadian exports. Domestic consumption of milk and its products in Canada is still increasing, however, more rapidly than dairy production. Of butter, there is an important net importation, almost if not quite balancing in butter-fat equivalent during the last few years the heavy exportation of cream and milk.

Not only is the exportable surplus of dairy products being lessened relative to the total Canadian dairy output, but of the remaining surplus an increasing proportion is being exported to the United States. From a quite negligible share before the war, this proportion on the basis of value of net exports had risen by 1928 to more than one-third.

While cheese exports still constitute fully 60 per cent in value of the total Canadian exports of dairy products, with cream next in value, the order of their importance is reversed in the sale of Canadian dairy produce in the United States. Canadian cheese for the United States reached its high point to date in 1927 when over 13 million pounds were exported to this country. Its importance in our markets is indicated in some measure by the fact that Canadian cheese has amounted to as much as one-sixth of our total cheese importation and by the further important fact that it is of the cheddar type selling in direct competition with the bulk of our domestic cheese and more and more on a basis of high quality of the product.

So far as changes in our import duties and the effects of such changes upon the exportation of Canadian dairy produce to the United States can be foreseen, it appears most probable that any additional handicaps would be met by some diversion of surplus cream to make up the present deficiency in the Canadian butter supply and that the surplus of Canadian dairy products would again take the form somewhat more predominantly of a high quality of cheddar cheese. The very considerable importation of butter into Canada during recent years has been taking place under remonstrance by Canadian dairy interests, and any added obstruction to their market outlet in the United States might be expected to react on the Canadian policy affecting importation. In that event, the line of least resistance would appear to lead in the direction of making up the present deficiency in the butter supply of the country.

When due allowance is made for shifts or adjustments to the most marketable of the dairy products, the physical possibilities of expansion in the Canadian dairy industry as indicated in the following descriptive material are still comparatively unexploited. In that vast country, practically equal in extent to that of continental United States, there are comparatively very limited areas of the agricultural lands that are so singularly adapted to a particular product as are those large sections of the United States given up more or less exclusively to cotton, tobacco, or citrus fruits. The alternatives to dairy production in Canada are, for the most part, such crops and products as can be grown extensively the world over and are accordingly subject to

world-wide competition. Further expansion of the dairy industry of Canada will for many years be dependent only upon comparatively remunerative markets, domestic or foreign. The dairy development of Canada, in view of the potential dairy resources, can continue, without abandonment of extensive farming and extensive dairying, so characteristic of competition from that source, to maintain a strong position in world markets. Despite the similar but unequally developed processes of industrialization in the two countries, the United States has come to be regarded as of growing importance among these world markets for Canadian dairy products.

Agricultural Resources:

Vast areas of northern Canada are unsuited to the growth of feed, as in the Yukon and Northwest Territories (Franklin, Keewatin, and Mackenzie). These areas include fully 40 per cent of the total land area of 2,270,000,000 acres in the Dominion. In the nine provinces where agriculture is now of importance, it is estimated according to reliable official sources that an area of only 353,162,190 acres or 27 per cent of the total land area of the provinces is available for use in agricultural production. Of this agricultural area in turn only 140,887,903 acres or somewhat more than one-third was occupied in 1921, according to the census of that year. The area now under cultivation is a still smaller fraction, about 18 per cent, of the total available agricultural land, field crops in 1926 having utilized 56,927,371 acres and pasture 9,308,440 acres.

CANADA: Area of occupied and available farm lands in nine Provinces, 1921

Provinces	Total land area	Agricultural land area			
		Total	Available for occupation	Occupied	
				Total	Percentage
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	Per cent
Prince Edward Island	1,398	1,258	42	1,216	97
Nova Scotia	13,483	8,092	3,369	4,723	58
New Brunswick	17,863	10,718	6,448	4,270	40
Quebec	1/ 373,693	43,745	26,488	17,257	39
Ontario	234,163	56,450	33,821	22,629	40
Manitoba	148,433	24,700	10,084	14,616	59
Saskatchewan	155,764	93,458	49,435	44,023	47
Alberta	161,872	97,123	67,830	29,293	30
British Columbia	226,186	22,618	19,757	2,861	13
Total	1/1,332,855	358,162	217,274	140,888	39

The Canada Year Book, 1927-28, page 35.

1/ As per Labrador Boundary Award of March 1, 1927.

"Thus in all the provinces but Prince Edward Island, large areas are still available for settlement, and while the nature of the soil and of the climate may in some cases restrict the variety of crops, in general the grain, root, and fodder crops can be profitably grown in all the provinces, while stock raising is carried on successfully both in the more densely settled areas and on their frontiers.

"The Maritime Provinces are noted for their fruit and vegetable crops, perhaps particularly for the oat and potato crops of Prince Edward Island and New Brunswick and the apples of the Annapolis Valley in Nova Scotia. Quebec and Ontario are pre-eminently mixed farming communities, various districts specializing in dairying, tobacco, sheep, etc., while the Niagara peninsula in Ontario has long been famous for its fruit crops of both large and small varieties. In Manitoba, Saskatchewan and Alberta the production of grains is still of primary importance but is giving way to more diversified types of agriculture, while the stock raising industry, once so typical of the prairies, is regaining much of its former importance. In British Columbia the fertile valleys are devoted principally to apple and other fruit crops, and numerous districts along the coast and on Vancouver Island are given over to general farming and market gardening.

"Of the larger areas of land still available for settlement, the clay belt of northern Ontario and Quebec, in which splendid crops are grown, is to a large extent undeveloped, and even larger areas in northern Saskatchewan and Alberta await cultivation." 1/

The climate of Canada is singularly varied with climatic types ranging from temperate to arctic and from marine to semi-arid. Owing to the vastness of the area comprising even the agricultural provinces of Canada, there is wide range in the climatic conditions as affected by latitude and by distance from the sea as well as by typographical features generally.

Of the latter, the high mountain ranges paralleling the coast of the Pacific Ocean are most significant in giving rise to a predominantly continental type of climate, the tempering and stabilizing influence of the ocean so pronounced in British Columbia being thus shut off from the western prairie lands. Chinook winds reaching over Alberta and into Saskatchewan do much to alleviate the effects of snow and blizzard otherwise characteristic of the prairie provinces.

In Quebec and Ontario the oldest and as yet the most important dairying section of Canada, climatic conditions are subject to a peculiar variety of modifying influences. These include variation in latitude and altitude, exposure to severe cold waves from the far northwest, and tempering by the lakes and the bay. The latter makes for a milder climate in Ontario than in Quebec which is not so tempered and lies generally farther to the north.

Thus the outstanding characteristic of the dairy resources in Canada is the wide range and variety of conditions affecting dairy development. The cultivated area extending some 4,000 miles east and west and as much as 800 miles north and south has every variety of soil, rainfall and temperature, and dairying is accordingly carried on under such varying conditions as prevail from Northern Italy to Siberia.

1/ The Canada Year Book, 1927-1927, page 35.

It is particularly noteworthy, however, that the growing of corn for winter feeding in the form of ensilage is quite unimportant in Canada as shown in the tabular statement below. Although the climate permits of corn-growing to a limited extent, principally in the southeastern sections, and there is the possibility that earlier varieties better adapted to the short growing seasons may continue to be developed, it is still true that milk yield in Canada suffers from the lack of abundant succulent feeds to supplement those of the comparatively short pasture seasons. Accordingly, Canadian dairy production has not the stability that characterizes a dairy section in which succulent feed is stored, either as ensilage or roots, from season to season or into which concentrated feeds are regularly shipped. This, again, is particularly true of the western provinces where the output is most directly dependent upon weather conditions affecting the feed supply.

CANADA: Acreage of corn for husking and for fodder, 1913-1928.

Year	For husking	For fodder	Total
	Acres	Acres	Acres
1913	278,140	303,650	581,790
1914	256,000	317,000	573,000
1915	253,300	332,469	585,769
1916	173,000	293,058	466,058
1917	234,339	366,518	600,857
1918	250,000	502,069	752,069
1919	264,607	511,769	776,376
1920	291,650	588,977	880,627
1921	296,866	585,395	882,261
1922	318,397	654,624	973,021
1923	317,729	659,070	976,799
1924	295,015	718,879	1,013,894
1925	238,767	518,651	757,418
1926	209,725	511,125	720,850
1927	131,626	471,569	603,295
1928	139,192	440,898	580,090

Date from Canada Yearbooks and Monthly Bulletin of Agricultural Statistics, January, 1929.

In the Dominion as a whole, climatic conditions are such as to cause dairying to be developed principally in the industralized form which necessitates the provision of artifical shelter, storage of feed, and employment of much labor. Dairy production is, as yet, nevertheless, highly seasonal and the seasons nearly coincide with the natural seasons of the principal dairy regions in the United States.

Agricultural Development in Relation to Industry:

Industrialization is in rapid progress in Canada, but much of the country is still predominantly agricultural or given over to other forms of primary production. Of the total net value of production in Canada during 1925, agriculture contributed approximately 40 per cent and other primary industries an additional 20 per cent, according to the most recent official estimate now available. As between different regions there is naturally wide variation in the degree of industrialization now reached or in prospect.

CANADA: Net value of production by industries, 1921-1925

Industry	1921	1922	1923	1924	1925	Percentage of the net value of production 1925
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	Per cent
Agriculture	1,092,422	1,148,694	1,107,572	1,140,895	1,342,889	40.4
Forestry	263,236	266,407	313,749	311,266	313,413	9.4
Fisheries	34,923	41,800	42,565	44,534	47,942	1.4
Trapping	9,527	16,814	16,165	14,786	14,778	0.4
Mining	162,927	184,297	214,079	209,583	226,583	6.8
Electric power.....	73,376	62,173	67,497	74,617	79,342	2.4
Total primary production ...	1,636,420	1,720,185	1,761,627	1,795,681	2,024,947	-
Construction	169,049	220,460	212,155	187,114	202,203	6.1
Custom and repair 1/	57,956	58,053	58,053	58,053	61,534	1.9
Manufactures 2/.....	951,572	1,730,616	1,019,622	977,334	1,036,532	31.2
Total secondary production ...	1,178,577	1,219,129	1,289,830	1,222,501	1,300,169	-
Grand total net value	2,814,997	2,939,314	3,051,457	3,018,182	3,325,116	100.0

The Canada Year Book, 1927-28, page 210.

1/ Statistics of custom and repair were not collected after 1922, and to effect comparability, the totals for that year were repeated in 1923 and 1924. The totals for 1925 were estimated according to the percentage change in the data for manufacturing.

2/ The item "manufactures" originally included dairy factories, sawmills, pulp-mills, fish-canning and curing, shipbuilding and certain mineral industries, which are also included in other headings above. This duplication, amounting in 1921 to $198,646,481, in 1922 to $257,819,129, in 1923 to $291,403,963, in 1924 to $279,310,986 and in 1925 to $324,348,686, is eliminated from the totals as given.

Within the different regions, the value of strictly agricultural production in proportion to total production varied in 1925 between little more than a fourth in Quebec and Ontario and the relatively complete agricultural exploitation of the prairie provinces, as follows:

CANADA: Distribution of the value of agricultural production, by Provinces, 1925

Province	Net value of agricultural production	Percentage of value of total production
	Million dollars	Per cent
Saskatchewan	335	93
Prince Edward Island	20	85
Alberta	195	76
Manitoba	112	62
New Brunswick	32	36
Nova Scotia	31	32
Ontario	363	30
Quebec	221	28
British Columbia	34	13
Total	1,343	40

Data from the Canada Year Book, 1927-28, pp. 213-14.

In broad outline the progress of Canadian agriculture during 50 years since confederation has been traced in the following comparison: 1/

CANADA: Crop acreage and number of livestock, 1871 and 1921

Item	1871	1921
	Acres	Acres
Crops:		
Wheat	1,646,781	23,261,224
Barley	2/ 868,464	2,795,665
Oats	2/ 3,961,356	16,949,029
Maize	2/ 195,101	296,866
Potatoes	403,102	701,912
Hay and clover	3,650,419	10,614,951
	Number	Number
Livestock:		
Horses	863,743	3,813,921
Milk cows	1,251,209	3,736,832
Other cattle	1,373,081	6,469,373
Sheep	3,155,509	3,675,860
Pigs	1,366,083	3,904,895

1/ Sir Henry Rew: "The Economic Resources of Canada in Relation to Britain's Food Supplies".

2/ 1891, earlier figures lacking.

During the last 50 years the acreage of grain crops in Canada has been expanded as indicated in the table above from 6,672,000 acres to 43,303,000 acres, representing an increase of more than 500 per cent. Over the same period of years, (comparing the census figures of 1871 and 1921) cattle increased in number from 2,624,290 to 10,206,205, or less than 300 per cent, while the increase in milk cows alone from 1,251,209 to 3,736,832 has been somewhat less than 200 per cent. The relatively heavy increase in grain production over this 50 year period is indicated somewhat more accurately by a further comparison based upon the above figures. In 1871 for each cow milked 5.3 acres of grain were grown, whereas in 1921 the ratio was 11.6 acres to each milk cow.

While direct comparisons are difficult owing to some differences in classification, this increase in dairy cows in Canada is apparently no greater proportionately than the increase has been in the United States where the number has about doubled in the same 50 years. This is consistent with the fact pointed out by Canadian writers that even as yet most of the increased dairy production in Canada as a whole is resulting from increased numbers of cows milked rather than from any greatly increased average yield per cow.

The present average yield for all Canada is estimated to approximate closely to 4,000 pounds per cow per year. In yield per cow, Canada thus ranks somewhat lower than average among the importand dairying countries indicating the extensive type of dairy farming as yet generally prevailing over that great area. Even in Quebec and Ontario, the oldest and most intensive dairying sections, the average yield in 1927 is officially estimated to have been only 3,861 pounds and 4,423 pounds, respectively. In Quebec, especially, many of the milk cows show the influence of early French stock in their small size and in the richness of their milk. The Ayrshire and milking Shorthorn are also important types.

Under these conditions the extent of cow-testing and herd-testing is of significance with relation to the competitive position of Canadian dairying. According to the most reliable figures obtainable, it appears that some 2 per cent of the milk cows in Canada are now under test as compared with some 3 per cent in the United States.

A comparison recently drawn by an official Canadian statement 1/ emphasizing the number of persons per thousand acres of improved land in Canada and the United States concludes that Canada "is ripe for a long upward trend in intensity of development somewhat similar to the trend in the United States since about 1890". The westward expansion of Canadian agriculture, in other words, has been a belated parallel to that of the United States. "During the past 50 years or more, Canada's area of improved land has increased much more rapidly than the Dominion's population. Between 1871 and 1921 the growth of population was 138 per cent while the growth in the area of improved land amounted to 308 per cent".

1/ Canada as a National Property, Department of the Interior, Ottawa, Canada, 1926, pages 72-75.

Comparison of the number of persons in Canada and in the United States, per 1,000 acres of improved land 1/

Year	United States	Year	Canada
	Number		Number
1870	205	1871	212
1880	176	1881	197
1890	176	1891	169
1900	183	1901	178
1910	192	1911	148
1920	210	1921	124

1/ Canada as a National Property, Department of the Interior, Ottawa, Canada, 1926, pages 72-75.

Sectional Characteristics of Canadian Dairying

Although an increasing proportion of Canadian butter is now being produced in the prairie provinces, Manitoba, Saskatchewan and Alberta, the bulk of the butter and cheese is still produced in Ontario and Quebec. The status of these older provinces as butter and cheese producing areas is being affected, however, not only by the shifting of the butter production westward, but by an equally notable development of the sale, in Quebec especially, of fresh milk and cream for export to the United States. Over 95 per cent of the cheese is still made in the area lying east of the Great Lakes, whereas that area now retains not more than three-fourths of the total Canadian butter output.

The Maritime provinces, somewhat similar to New England in relation to the dairy industry of the two countries, scarcely supply the local needs of that area for dairy produce. In Price Edward Island, for example, potato growing has interfered with dairying to such a large extent during recent years that many farms there are being depleted of dairy cows, according to a report as of March 5, 1929, from Vice Consul Edwin N. Gunsaulus, Jr., of Charlottetown, quoting the secretary of the local dairymen's association.

In British Columbia, with its tempered coastal climate, fruit growing predominates and much of the butter consumed comes from the prairie provinces and from New Zealand and Australia.

One of the most significant developments in Canadian dairying as affecting our foreign competition, has taken place in the western provinces, where, as population is so predominantly rural and consumption comparatively small, important surpluses principally of butter are becoming available for export. These surpluses vary in a direct relation to volume of total output and this, in turn, is determined chiefly by the relative profitableness of grain and beef growing on the one hand, and dairying on the other.

The tendency to favor grain growing in this section is of long standing. In the Annual Report of the Department of Agriculture of the Northwest Territories for 1904, the statement is made that the dairy industry "cannot

be said to be in a flourishing condition in the eastern part of the territories, although there are many districts there which are eminently adapted to its successful prosecution. Undoubtedly one of the principal drawbacks is the expensiveness of farm help, and another that even in those portions of the country which are suitable only for mixed farming there exists the tendency to sacrifice every energy to the production of as much wheat as possible".

The beginning of the commercial importance of butter from the Canadian Northwest was suggested thus in a report of the Commissioner of Agriculture and Dairying: "British Columbia has always been considered the principal market for the product of the Northwest Territories creameries, but during the seasons of 1899 and 1900 some difficulty was experienced in disposing of all the butter at satisfactory prices. In both 1901 and 1902 it was found necessary to ship several carloads to Montreal for export to Great Britain". The Yukon and the Orient (especially Japan) were then looked to as the most promising outlets for any surplus.

The present distribution of dairying in Canada is shown in the following official estimates of comparative production according to provinces and sections.

CANADA: Percentage distribution of dairying by Provinces and sections, 1927

Province or section	Milk cows	Dairy production	Creamery butter	Cheese
	Per cent	Per cent	Per cent	Per cent
Ontario	32	37	38	69.5
Quebec	31	32	30	26.7
Prairie provinces	27	24	24	1.9
Maritime provinces	8	5	5	1.8
British Columbia.	2	2	3	.1

The latest available data for numbers of cows and the production and utilization of milk by provinces are reproduced in the table on the following page as published by the Dominion Bureau of Statistics in the Monthly Bulletin of Agricultural Statistics for December, 1928.

CANADA: Number of cows in-milk or in-calf, proportion not milked, number of cows milked, average production per cow, and total milk production, by Provinces, 1927

Province	Cows			Milk production	
	In-milk or in-calf	Percentage not milked	Milked	Average per cow	Total
	Number	Per cent	Number	Pounds	1,000 lbs
Prince Edward Island.	58,208	4.7	55,472	3,219	178,564
Nova Scotia	142,762	4.2	136,766	3,849	526,412
New Brunswick	111,304	1.3	109,857	3,674	403,615
Quebec	1,092,314	3.8	1,050,806	3,861	4,057,162
Ontario	1,299,840	10.8	1,159,457	4,423	5,128,278
Manitoba	255,874	28.5	182,950	3,610	660,450
Saskatchewan	462,270	36.9	291,692	3,597	1,049,216
Alberta	379,992	44.2	212,036	3,592	761,633
British Columbia	91,747	36.6	58,168	5,070	294,912
Canada, 1927	3,894,311	16.4	3,257,204	4,010	13,060,242
1926	3,839,191	13.2	3,332,479	4,023	13,407,340

Monthly Bulletin of Agricultural Statistics, Ottawa, December 1928.

CANADA: Total dairy production expressed as milk equivalent of the various products, by Provinces, 1927 1/

Province	Production of milk	Made into butter		Made into cheese		Miscellaneous factory products	Consumed fresh or otherwise used
		Dairy	Creamery	Home-made	Factory		
	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds
Prince Edward Island	178,564	46,820	47,275	8	18,563	831	65,067
Nova Scotia .	526,412	140,460	118,449	783	476	14,082	252,161
New Brunswick	403,615	58,525	44,437	83	8,997	2,930	288,642
Quebec	4,057,162	432,949	1,289,862	910	420,120	23,006	1,890,315
Ontario	5,128,278	659,201	1,552,385	1,034	1,077,007	207,773	1,630,877
Manitoba	660,450	198,911	333,148	980	7,114	4,782	115,514
Saskatchewan	1,049,216	409,675	280,815	194	3,013	7,681	347,837
Alberta	761,633	282,395	378,767	358	9,505	4,091	146,519
British Columbia ..	294,912	55,014	97,937	303	1,442	22,241	117,976
Canada, 1927	13,060,242	2,223,950	4,143,076	4,653	1,546,237	287,417	4,854,908
1926	13,407,340	2,223,950	4,148,469	5,788	1,923,394	254,072	4,851,667

Monthly Bulletin of Agricultural Statistics, Ottawa, December, 1928.

1/ Estimates are based on the following coefficients:--Pounds: butter x23.41; cheese x11.2; condensed milk x2.28; evaporated milk x2.2; whole milk powder x7.42; gallons: ice cream x15.71; whole milk x10.3; cream, pound of butterfat x28.5714; cream powder 21.

Alternative Farm Enterprises as Affecting Dairying

The degree to which dairying has developed in competition with other branches of agriculture in the different sections is indicated in the following tables showing the value of the output of other farm products together with dairy products over a period of years, and the value of dairy products as a percentage of the total agricultural revenue. Although the data available cover only a brief period, they afford some indication, as well, of the extent to which the relative profitableness of alternative farm enterprises has tended recently to affect the maintenance of the dairy industry in the various sections. Particularly notable is the slowing up for a period during recent years of the expansion of dairying in the prairie provinces where higher prices of grains and beef cattle tended to remove some of the earlier stimulus to butter production. Already, however, in the current season, 1929, a marked increase is again reported in the butter output of this section.

CANADA: Estimated gross annual agricultural revenue, 1918 - 1927

Source of revenue	1918	1919	1920	1921	1922
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars
Field crops	1,372,936	1,537,169	1,455,244	931,865	962,293
Farm animals	194,498	186,679	143,854	98,424	77,548
Wool	12,400	11,000	5,280	2,975	3,180
Dairy products	200,341	251,527	260,337	260,337	215,576
Fruits and vegetables	40,000	40,000	40,000	40,000	55,855
Poultry and eggs	40,000	40,000	45,000	55,000	58,815
Fur farming	1,048	1,048	1,140	1,065	1,538
Maple products	5,258	7,447	4,533	4,174	5,576
Tobacco	4,270	15,620	5,893	2,393	4,548
Flax fibre	2,286	5,524	434	-	105
Clover and grass seed	1/	1/	1/	1/	4,360
Honey	1/	1/	1/	1/	1/
Total	1,873,037	2,096,014	1,961,715	1,396,233	1,389,394

	1923	1924	1925	1926	1927
Field crops	899,226	995,236	1,098,304	1,104,983	1,172,643
Farm animals	125,442	148,324	177,031	178,383	183,927
Wool	3,160	3,771	3,958	4,140	4,108
Dairy products	233,683	217,974	241,069	246,319	250,343
Fruits and vegetables	58,216	44,848	48,897	43,075	46,025
Poultry and eggs	62,370	65,084	74,267	83,569	97,937
Fur farming	2,175	3,218	3,679	3,520	4,798
Maple products	4,769	5,991	5,288	4,896	4,935
Tobacco	3,518	4,359	7,004	7,380	9,112
Flax fibre	166	712	454	208	321
Clover and grass seed	4,360	3,300	3,598	5,097	3,841
Honey	1/	2,013	2,472	1,921	2,937
Total	1,397,085	1,494,830	1,666,021	1,683,491	1,780,927

Year Book of Canada, 1921 and 1927-28, and revised figures for years 1923-27 from Monthly Bulletin of Agricultural Statistics, March 1929.

1/ Not separately reported.

CANADA: Value of dairy products as percentage of total agricultural revenue, by Provinces, 1918-1927

Year	Canada	Prince Edward Island	Nova Scotia	New Brunswick	Quebec
	Per cent	Per cent	Per cent	Per cent	Per cent
1918	10.7	7.3	4.8	2.8	14.5
1919	12.0	7.7	4.8	3.5	15.3
1920	13.3	15.5	11.0	7.9	14.5
1921	18.6	19.1	16.0	9.5	20.0
1922	15.5	15.4	17.5	16.0	21.9
1923	17.3	17.0	23.2	23.4	27.0
1924	15.1	16.3	24.6	25.5	26.5
1925	14.3	15.0	25.9	20.0	26.8
1926	14.3	14.0	24.2	20.7	27.4
1927	14.1				

Year	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
1918	17.2	5.4	1.8	6.3	20.0
1919	20.5	6.1	2.4	7.1	18.7
1920	20.8	9.2	4.4	7.2	19.2
1921	28.3	15.1	5.3	14.1	22.3
1922	22.2	10.6	5.6	11.8	13.7
1923	23.5	15.7	6.6	8.6	13.7
1924	19.9	7.0	6.3	6.4	13.2
1925	20.4	6.6	4.6	6.3	13.5
1926	19.5	6.2	5.2	6.0	12.5

Based on data from Year Book of Canada, 1921, p. 281-282 and 1927-28 p. 229-30.

The tendency in Canada and particularly in the prairie provinces for dairy production to be adjusted to other alternative farm enterprises in accordance with relative returns is indicated by the following comparative figures. This is especially apparent in the period 1921-1924 when the prices of wheat and other field crops and of beef cattle fell to unusually low levels. Equally important is the relative decline in dairy production which appeared for a time along with the recovery in prices of the competing products. Allowance is to be made in such a comparison for more or less lag in these adjustments. When, for example, in 1921 grain prices fell relatively much more than dairy products, the acreage of wheat in comparison with numbers of cows milked in that year was at the highest point since the first of the war years. A gradual adjustment after 1921 is indicated by the ratios of acres of wheat grown per cow milked until in 1925, when the ratio reached the lowest point in recent years the price ratio had already become more favorable to dairy products than in 1921. It should be made clear, too, that since wheat growing is the major farm enterprise in the prairie provinces the adjustment to relatively heavy dairy production takes place not so much by the cutting down of wheat acreage which has been comparatively stable in its expansion since 1914, as by adding cows to the milking herds. This is reflected in the changing ratios of the number of cows milked to the total number of cattle. In the better dairy sections, of course, dairy production is somewhat more subject to fluctuation as a result of factors affecting yield per cow.

Canadian dairy production as influenced by prices of beef cattle and grain, 1915-1927

Commodity and year	Wholesale price index, 1913=100		Ratio of price index of steers to milk products	Number of milk cows		Milk cows as percentage of total number of cattle	
	Choice steers	Milk and milk products		Prairie Provinces	Canada	Prairie Provinces	Canada
			Per cent	1,000 head	1,000 head	Per cent	Per cent
Beef cattle -							
1915	116.0	108.9	106	553	2,667	27.6	44.0
1916	122.2	119.5	102	798	2,836	29.2	43.0
1917	161.8	149.1	108	882	3,202	26.7	40.4
1918	187.0	165.1	113	907	3,539	24.4	35.2
1919	167.5	192.8	87	939	3,548	25.1	35.2
1920	184.9	203.0	91	882	3,505	25.7	36.6
1921	114.3	167.8	68	1,097	3,737	25.9	36.6
1922	104.0	136.0	76	1,100	3,746	27.5	38.5
1923	98.7	145.1	68	1,068	3,659	28.5	39.6
1924	98.3	137.0	72	1,165	3,727	29.4	39.4
1925	105.1	142.2	74	1,190	3,830	31.8	41.2
1926	102.7	140.7	73	1,202	3,951	34.1	43.1
1927	121.1	144.4	84	1,098	3,894	31.0	42.5

	Wholesale price index, 1913=100		Ratio of price index of grains to milk products	Wheat acreage		Acres of wheat grown per cow milked	
	Grains	Milk and milk products		Prairie Provinces	Canada	Prairie Provinces	Canada
			Per cent	1,000 acres	1,000 acres	Acres	Acres
Grains -							
1915	145.0	108.9	133	11,745	15,109	21.2	5.6
1916	153.8	119.5	129	14,363	15,370	18.0	5.4
1917	244.8	149.1	164	13,619	14,756	15.4	4.6
1918	252.7	165.1	153	16,125	17,354	17.8	4.9
1919	261.8	192.8	136	17,750	19,126	18.9	5.4
1920	280.6	203.0	138	16,841	18,232	19.0	5.2
1921	177.7	167.8	106	22,181	23,261	20.2	6.2
1922	138.4	136.0	102	21,223	22,423	19.2	6.0
1923	124.9	145.1	86	20,880	22,672	19.5	6.2
1924	143.9	137.0	105	21,066	22,056	18.0	5.9
1925	180.3	142.2	127	20,943	21,973	17.5	5.7
1926	163.4	140.7	116	21,805	22,896	18.1	5.8
1927	166.4	144.4	115	21,426	22,460	19.5	5.8

Data from Year Book of Canada 1921 and 1927-28, Livestock and Animal Products Statistics, 1916-1927, Monthly Bulletin of Agricultural Statistics, January 1929, and Prices and Price Indexes, 1913-1927, Dominion Bureau of Statistics.

The Canadian Surplus as Affecting the United States

Canada with its vast resources and comparatively sparse population early developed a dairy industry that provided a surplus for world markets. This exportable surplus of dairy products is now diminishing relative to the total dairy output of that country. Calculating on the basis of the estimated value of all milk and milk products in the form in which the milk was utilized and the officially recorded value of exports and imports of all dairy products, the proportion represented by the surplus declined from an approximate one-third as late as 1907 to one-fifth and less in recent years.

This relationship, which has significance in any attempt at discovering the balance that is being struck between the potential development of the Canadian dairy industry and the effects of growing industrialism upon domestic demand, is indicated in the following table. Calculations are based upon official estimates of total value of milk and milk products as actually utilized and upon official reports of the value of imports and exports of all dairy products.

CANADA: Value of dairy production and exports, specified years 1900-1927 1/

Year	Production 2/	Domestic exports	Imports for consumption	Net exports	
				Total	Percentage of production
	Dollars	Dollars	Dollars	Dollars	Dollars
1900 ..	66,471	3/ 23,993	329	23,664	35.6
1907 ..	94,000	30,910	177	30,732	32.7
1910 ..	109,340	23,159	257	22,902	20.9
1920 ..	288,836	56,398	572	55,826	19.3
1924 ..	217,975	44,107	1,304	42,803	19.6
1925 ..	241,069	55,208	4,263	50,945	21.1
1926 ..	249,710	41,616	3,119	38,497	15.4
1927 ..	253,737	34,025	6,180	27,846	11.0

The Year Book of Canada and Monthly Statements of Imports and Exports.

1/ Production as of calendar years, trade as of fiscal year beginning April 1.

2/ Officially estimated.

3/ Year ended June 30,.1901.

Although comparable figures on this basis are available for only a short period of years, they are indicative of the tendency within Canada toward increased dairy production along with a relatively greater increase in domestic consumption. The domestic consumption of dairy products is being increased substantially as the result of growth in population and the rapid industrialization of the country with the increased buying power that normally grows out

of industrial development. The production and consumption of butter and cheese as officially estimated for recent years are shown in the following tabular statements as published in Livestock and Animal Products Statistics, Canada, 1927.

BUTTER: Production, trade and consumption in Canada, 1924-1927

Item	Unit	1924	1925	1926	1927	1928
		Thousands	Thousands	Thousands	Thousands	Thousands
On hand January 1 ..	pound	16,628	23,316	10,016	14,548	21,609
Production -						
Creamery	"	178,894	169,495	177,209	178,438	1/ 170,353
Home-made	"	100,000	100,000	95,000	95,000	90,000
Imports	"	1,174	100	9,152	11,209	16,802
Total supply ..	"	296,696	292,911	291,377	299,195	298,764
Exports	"	22,344	26,647	9,814	2,696	1,949
Net supply	"	274,352	266,264	281,563	296,499	296,815
On hand December 31.	"	23,316	10,016	14,548	21,609	13,786
Total consumption:	"	251,036	256,248	267,015	274,890	283,029
Population	number	9,227	9,364	9,390	9,519	9,658
Consumption per capita	pound	27.21	27.36	28.44	28.88	29.31

1/ Preliminary.

CHEESE: Production, trade and consumption in Canada, 1924-1927

Item	Unit	1924	1925	1926	1927	1928
		Thousands	Thousands	Thousands	Thousands	Thousands
On hand January 1 ..	pound	14,356	14,570	22,411	23,302	20,845
Production -						
Factory	"	149,708	177,139	171,732	138,027	1/ 143,690
Home-made	"	500	500	500	500	500
Imports	"	909	10,274	1,219	1,721	1,779
Total supply ...	"	165,473	202,483	195,862	163,550	166,813
Exports	"	121,466	150,743	134,656	110,533	114,152
Net supply	"	44,007	51,740	61,206	53,017	52,661
On hand December 31.	"	14,569	22,411	23,302	20,845	18,464
Total consumption:	"	29,438	29,329	37,904	32,172	34,197
Population	number	9,227	9,364	9,390	9,519	9,658
Consumption per capita	pound	3.19	3.13	4.04	3.38	3.54

1/ Preliminary.

Of the Canadian exportable surplus of dairy products, accordingly, cheese is still of predominant importance, accounting in recent years for some 60 per cent of the total value of dairy produce exported. Fresh cream has recently come to be next in importance, the two combined making up at present fully three-fourths of the total value. The following tabular statement of values and percentages is intended to show in cross-section the flow of trade in milk and milk products from Canada. Value of all the products is taken as the measure of their relative importance rather than any combination of units of milk and its various products as giving the most practical comparison for a particular time.

Value of Canadian exports of dairy products and relative values, by products, 1927-1928

Product	Year ended March 31			
	Value		Percentage of total value	
	1927	1928	1927	1928
	Dollars	Dollars	Per cent	Per cent
Cheese	24,956,179	21,100,625	60.0	62.1
Cream	7,750,233	7,119,925	18.6	20.9
Butter	3,351,589	1,053,553	8.1	3.1
Milk, condensed	2,695,945	2,456,337	6.5	7.2
Milk, evaporated	972,012	904,186	2.3	2.7
Milk, fresh	990,746	721,557	2.4	2.1
Milk, powder	869,412	629,057	2.1	1.9
Total milk and milk products 1/	41,586,116	33,985,240	100.0	100.0

Data from Quarterly Report of the Trade of Canada, March, 1928.
1/ Exclusive of casein.

Cheese-making by Canadian farmers had come to be a fairly important farm enterprise by 1860. The first cheese factory is said to have been established in 1864 and about 15 tons of cheese made and shipped to England. The peak of exportation of cheese from Canada was reached in 1902-03 when 234 million pounds were exported. By 1927-28 this had declined to 118 million pounds.

The surplus of Canadian butter has always been relatively unimportant. In the earlier years factory production was confined to cheese, the first butter factory having been built in 1875 in Ontario. The record exportation for recent years of around 27 million pounds, in 1925 largely from the newly developed butter areas of the prairie provinces,

was about the same as in 1900, although in the interval the butter exports have dwindled at times to rather negligible quantities.

The continued predominance of cheese in the export trade must be explained in large part by the momentum of an early start made when transportation facilities were more favorable or at any rate less unfavorable to the shipment of cheese than to butter. England has always been the principal market for Canadian cheese, and the long haul without modern refrigeration caused less deterioration in cheese than would have been the case had the dairy interests attempted to turn to butter-making for the export trade. Other influences are, of course, not to be ignored such as the preferences and experience of Canadian settlers, a highly seasonal milk production from herds chiefly grass fed, and a sufficiently close settlement in the older provinces to make possible the collection of an adequate fresh milk supply for cheese factories. A highly seasonal surplus of butter, on the other hand, has never been conducive to the establishment of Canadian butter in the British markets in competition with butter from sources that provided a relatively steady supply throughout the year.

The course of the export trade in cheese from the United States and Canada as shown below indicates something of the earlier importance of the competition from Canada in the foreign markets of both countries. The export trade of the United States in cheese developed first, reaching its peak about 25 years earlier than that of Canada. The "displacement" of United States cheese exports by those from Canada was quite complete by the time the latter had reached their maximum. It is not to be concluded simply that the one has forced the other out of the foreign cheese markets. More significant, rather, is the fact that in both countries domestic consumption has tended to absorb an increasingly large share of the output. While the United States has gone on to the position of an importer of cheese with an important part of its supply coming from Canada, the Canadian surplus is steadily lessening. The process of industrialization with growth of the home market has been earlier and more complete in the United States than in Canada.

Trend of exports of cheese from United States and Canada, 1853-1927 1/

Year 2/	United States	Canada	Year 2/	United States	Canada	Year 2/	United States	Canada
	Million pounds	Million pounds		Million pounds	Million pounds		Million pounds	Million pounds
1853	3		1878	124	46	1903	(-)2	234
1854	6		1879	142	40	1904	1	216
1855	3		1880	128	49	1905	(-)13	216
1856	7		1881	148	51	1906	(-)11	178
1857	5		1882	128	58	1907	(-)17	190
1858	7		1883	99	70	1908	(-)24	165
1859	6		1884	107	80	1909	(-)27	180
1860	14		1885	106	78	1910	(-)38	181
1861	31		1886	86	74	1911	(-)35	162
1862	33		1887	73	84	1912	(-)40	154
1863	42		1888	79	89	1913	(-)47	143
1864	47		1889	77	94	1914	(-)61	136
1865	52		1890	86	106	1915	5	168
1866	36		1891	73	118	1916	14	180
1867	51	6	1892	74	134	1917	52	169
1868	48	5	1893	71	155	1918	34	152
1869	40	6	1894	65	146	1919	16	126
1870	57	8	1895	50	165	1920	1	133
1871	64	16	1896	26	169	1921	(-)6	133
1872	66	19	1897	39	197	1922	(-)27	114
1873	80	24	1898	43	190	1923	(-)46	115
1874	91	32	1899	26	186	1924	(-)62	138
1875	101	35	1900	35	196	1925	(-)52	159
1876	98	36	1901	24	201	1926	(-)58	152
1877	107	38	1902	10	229	1927	(-)86	116

1/ Exports minus imports. Excess of imports over exports is indicated by the minus sign (-).

2/ United States exports are for year ended June 30; Canadian, year beginning July 1 from 1867 to 1905 inclusive, 1906, nine months only, 1907, and thereafter year beginning April 1. Official sources.

The United States is becoming an increasingly important market for Canadian dairy products. During the past three years exports to the United States have amounted to approximately one-third of the total value of dairy products exported from Canada. Just before the war period the proportion was not more on the average than five per cent. In the following tabulation the changes in value would have to be corrected for changes in the general price level to be comparable from year to year but the change in the relative importance of the United States as an outlet is fairly indicated by the marked shift over the period in the percentage of total value represented by United States trade.

Value of Canadian exports of milk and milk products 1/ and proportion of total exported to United States, 1909-1914 and 1920-1928

Year ended Mar 31	Domestic exports	Imports for consumption	Total net exports	Domestic exports to United States	Imports for consumption from United States	Net exports to the United States	
						Total	Percentage of total net exports
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Per cent
1909	21,997	401	21,595	46	216	170	-
1910	23,159	257	22,902	444	61	383	01.7
1911	23,700	468	23,232	1,859	117	1,741	07.5
1912	24,066	1,024	23,042	933	224	709	03.1
1913	21,699	2,405	19,293	874	388	487	02.5
1914	21,182	2,394	18,788	1,938	396	1,542	08.2
1920	56,398	572	55,826	11,201	466	10,735	19.2
1921	52,864	2,256	50,608	8,085	1,182	6,912	13.7
1922	36,542	2,288	34,254	5,182	743	4,439	13.0
1923	35,301	1,844	33,457	5,844	850	4,994	14.9
1924	39,153	1,284	37,869	9,577	295	9,283	24.5
1925	44,107	1,304	42,803	8,475	293	8,183	19.1
1926	55,208	4,263	50,945	9,508	315	9,193	18.0
1927	41,616	3,119	38,497	12,304	257	12,047	31.3
1928	34,025	6,180	27,846	10,935	265	10,670	38.3

Compiled from Reports of the Trade of Canada.
1/ Exclusive of Casein.

Imports of dairy products from Canada into the United States take the form chiefly of fresh cream and milk, although during the last few years cheese from Canada has been an important part of our imported supply.

Canadian cheese has amounted to as much as one-sixth of out total imports of cheese, and is of the Cheddar type most directly competing with the bulk of our domestic product. The competition is now regarded in Canada as resting largely on a basis of comparative quality of product and the improvement of quality is a matter upon which Canadian dairy leaders are placing more and more emphasis.

Exports of cheese from Canada to the United States declined during the past year, but despite the comparatively high prices of the Canadian product it continued to compete materially in our markets. Our imports of cheese from Canada had been quite negligible until 1926, when they

reached 11,835,000 pounds with a new record of 13,268,000 pounds in 1927. In 1928, imports fell to 7,488,000 pounds. The average import values per pound in the three years were 17.2 cents, 19.3 cents, and 24.1 cents, respectively. Prices received in Canada for the 1928 output are estimated to have averaged nearly three cents a pound higher than for that of 1927. The higher prices obtained for the 1928 output are attributed to improved quality of the product, to less keen competition in the British markets from both domestic and New Zealand supplies, and to increased Canadian consumption. The continued importation of Canadian cheese into the United States in that year was based predominantly upon its quality. Cheddar cheese prices in the United States averaged practically the same in 1928 as in 1927, while the import value of the Canadian cheese which continued to enter our markets was 25 per cent higher. The following grading returns have been cited by the Dominion Dairy Commissioner to show that there was more improvement in quality of Canadian cheese in 1928 than in any other year since grading was inaugurated.

CANADA: Total quantity of cheese graded and percentage grading special and first grade

Year	Boxes graded	Percentage special and first grade
	Number	Per cent
1923	1,458,129	78.0
1924	1,584,359	84.7
1925	1,895,112	85.9
1926	1,845,581	88.3
1927	1,472,333	87.4
1928	1,567,182	93.1

Dominion Dairy Commissioner.

Such an improvement in the quality of Canadian cheese is regarded as of particular significance with reference to its competitive advantage in the markets both of the United Kingdom and the United States.

Our very considerable importation of fresh cream and milk is practically all from Canada. The following table gives some indication of the magnitude of this trade. These imports of cream and milk have together in recent years contained sufficient butterfat to have made approximately 20 million pounds of butter yearly.

CREAM AND MILK, FRESH: Exports from Canada to United States, 1911-1928

Year ended Mar 31	Cream	Milk	Estimated total milk equivalent 1/
	Imperial gallons 2/	Imperial gallons 2/	1,000 pounds
1911	1,823,821	58,102	156,535
1912	886,174	7,771	75,848
1913	820,360	7,939	70,223
1914	1,323,909	307,188	116,358
1915	1,895,575	477,692	166,992
1916	1,262,280	394,831	111,993
1917	803,498	760,805	76,535
1918	585,601	1,116,362	61,567
1919	485,015	827,973	49,997
1920	795,780	1,985,113	88,486
1921	1,279,195	1,508,618	124,910
1922	1,671,678	1,391,299	157,258
1923	1,712,241	856,039	155,214
1924	2,783,866	2,191,395	260,591
1925	3,384,186	3,088,212	321,156
1926	4,120,181	4,598,199	399,636
1927	4,496,523	4,886,445	434,782
1928	4,017,796	3,624,794	380,857

Reports of the Trade of Canada.

1/ Estimated on the basis of cream testing 29 per cent fat and milk averaging 3.5 per cent.

2/ Imperial gallon = 1.2 United States gallons or 10.3 pounds of milk. An imperial gallon of cream is estimated, accordingly, as equivalent to 85.5 pounds of milk.

During recent years Canada has become a net importer of butter. As late as 1925, the exportation of butter from Canada was fairly important, having amounted in that year to nearly 27,000,000 pounds, but this has now given place to an estimated excess of imports amounting to more than 20,000,000 pounds in the calendar year 1928.

The disappearance of the Canadian exportable surplus of butter is attributable to several developments of some significance in relation to the dairy industry of the United States. In part, milk that formerly went into the manufacture of butter for export is being diverted to other forms of milk utilization, notably cream for export to the United States. This item alone would account for the utilization of a quantity of milk sufficient during several recent years to have produced an average of some 20,000,000 pounds of butter, or practically the equivalent of the average butter imports of the past two years.

The bulk of the butter now being imported into Canada is from New Zealand. Total imports of butter and quantities imported from New Zealand and Australia during recent years are as follows:

BUTTER: Imports into Canada, 1924-1929

Country of origin	Year ended March 31					
	1924	1925	1926	1927	1928	1929
	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds
New Zealand ...	1,297	163	2,343	4,905	13,624	1/24,731
Australia	-	-	2,485	801	572	1/ 222
Other	261	35	4,324	5,503	1,430	1/ 657
Total	1,558	198	9,152	11,209	15,626	1/25,610

Quarterly Reports of Trade of Canada
1/ Preliminary.

The Canadian tariff on New Zealand and Australian butter was reduced to one cent a pound on October 1, 1925, when the Australian trade treaty went into effect. Prior to that date, the import duty was four cents on Australian and three cents on New Zealand butter, and Canadian dairymen are now urging a return to higher rates. Since early in 1926, Australian butter has been quite effectually excluded from Canada, in fact, by the assessment of additional duty provided for under the Dumping Act to compensate for the export bounty paid Australian exporters in the administration of the Paterson plan. Increasing quantities of New Zealand butter are being imported each year, a new record of 26 million pounds having been made in the 12 months ended March 31, 1929. Any further restrictions tending to discourage this import trade in butter would operate along with the increasing Canadian consumption to lessen the direct competition of Canadian dairy produce in United States markets.

Recent and pending increases in the tariff on dairy products entering the United States, particularly on cream and milk from Canada, will certainly limit this outlet for the Canadian surplus. The import duty on cream and milk has just been increased 50 per cent that is, from 20 to 30 cents per gallon on cream and 2⅓ to 3-3/4 cents per gallon on milk. This increase by executive order was made effective June 13, 1929. It is now being urged that these rates along with those on cheese, at least, be further increased through pending legislation.

Note: For any further detailed statistics of the Canadian dairy industry, see Statistical Bulletin No. 25, Dairy Statistics, published by the Department of Agriculture, February, 1929.

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