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PRODUCTION OF CONCENTRATED MILK, CANADA, SEPTEMBER, 1938.

Statistics of the production of concentrated milk in Canada in September, 1938, are based on returns from the 55 firms whose factories manufactured during the month any of the various items included in the classification "concentrated milk", i.e., condensed milk, evaporated milk, milk powder, etc.

Production.- Production in September of all items of concentrated milk, combined, totalled 13,434,997 pounds, a decrease from the preceding month of 1,919,768 pounds, or 13 per cent, and a decrease from September, 1937, of 340,941 pounds or 2 per cent. This is the first month in the present year to record a decrease in comparison with the corresponding month of 1937.

Cumulative Production.- The total manufacture of concentrated milk (all items combined) in the nine months ended September 30, was 132,718,116 pounds, compared with 107,918,614 pounds in the corresponding period of 1937.

Foreign Trade.- Exports of concentrated milk in September record decreases from September, 1937, in all items - condensed milk decreased by 54 per cent; evaporated milk by 36 per cent; and milk powder by 1 per cent. There were no exports of casein in either month. The import figures for September are not available at date of the preparation of this report.

Storage Holdings.- The total amount of concentrated milk held in storage at date of October 1, was 34,109,393 pounds, compared with 34,691,628 pounds at the beginning of the preceding month. The quantity of evaporated milk in storage represented 64 per cent of the total for all items.

1. Concentrated Milk Production for September, 1938, with Comparative Statistics for August, 1938 and September, 1937.

Kind	September, 1938 Lb.	August, 1938 Lb.	September, 1937 Lb.
Condensed milk (sweetened):			
Case goods	455,945	274,949	563,183
Bulk goods	358,798	378,635	385,716
Condensed skim milk	454,499	481,888	452,077
Evaporated milk (unsweetened):			
Case goods	7,963,978	9,839,984	9,400,288
Bulk goods	58,926	67,064	55,087
Evaporated skim milk	69,061	62,984	56,694
Whole milk powder	602,910	532,496	565,495
Skim milk powder	2,691,056	2,992,820	1,711,014
Cream powder	7,040	-	4,608
Buttermilk powder	426,599	381,134	216,020
Condensed buttermilk	192,970	136,380	273,759
Casein	120,884	169,050	68,623
Sugar of milk	32,331	37,381	23,374
TOTAL	13,434,997	15,354,765	13,775,938

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
RESEARCH REPORT

THE CHEMISTRY OF THE CARBON DIOXIDE SYSTEM

The following report describes the results of a series of experiments conducted in the laboratory of the Department of Chemistry, University of Chicago, during the period from 1938 to 1940. The work was supported in part by the National Science Foundation and in part by the Office of Naval Research.

The first part of the report deals with the study of the equilibrium between carbon dioxide and its hydrate. The results show that the equilibrium constant for the reaction is a function of temperature and pressure, and that the heat of hydration is approximately 10,000 calories per mole. The second part of the report describes the study of the kinetics of the reaction between carbon dioxide and water. The results show that the reaction is first order with respect to carbon dioxide and second order with respect to water. The rate constant for the reaction is a function of temperature and pressure, and the activation energy is approximately 15,000 calories per mole.

The third part of the report describes the study of the reaction between carbon dioxide and sodium hydroxide. The results show that the reaction is first order with respect to carbon dioxide and first order with respect to sodium hydroxide. The rate constant for the reaction is a function of temperature and pressure, and the activation energy is approximately 10,000 calories per mole. The fourth part of the report describes the study of the reaction between carbon dioxide and sodium carbonate. The results show that the reaction is first order with respect to carbon dioxide and first order with respect to sodium carbonate. The rate constant for the reaction is a function of temperature and pressure, and the activation energy is approximately 10,000 calories per mole.

Temperature (°C)	Pressure (atm)	Rate Constant (l/mole-sec)	Activation Energy (cal/mole)
10	1	1.0	15,000
20	1	2.0	15,000
30	1	4.0	15,000
40	1	8.0	15,000
50	1	16.0	15,000
60	1	32.0	15,000
70	1	64.0	15,000
80	1	128.0	15,000
90	1	256.0	15,000
100	1	512.0	15,000
10	2	2.0	15,000
10	4	4.0	15,000
10	8	8.0	15,000
10	16	16.0	15,000
10	32	32.0	15,000
10	64	64.0	15,000
10	128	128.0	15,000
10	256	256.0	15,000
10	512	512.0	15,000

2. Cumulative Production of Concentrated Milk for the Nine Months Ended September 30, 1938, with Comparative Statistics for the Nine Months ended September 30, 1937.

Kind	Nine Months Ended September 30:	
	1938	1937
	Lb.	Lb.
Condensed Milk: (Sweetened)		
Case goods	4,263,844	5,658,606
Bulk goods	3,333,809	2,572,352
Condensed skim milk	4,279,370	3,881,419
Evaporated milk: (unsweetened)		
Case goods	87,470,477	71,059,740
Bulk goods	492,925	313,472
Evaporated skim milk	532,117	395,394
Whole milk powder	5,601,190	4,233,080
Skim milk powder	20,674,387	14,757,136
Cream powder	21,755	29,849
Buttermilk powder	3,502,596	1,934,892
Condensed buttermilk	1,029,578	2,032,220
Casein	1,285,026	899,086
Sugar of milk	231,042	151,368
TOTAL	132,718,116	107,918,614

3. Production by Months of Condensed Milk, Evaporated Milk and Skim Milk Powder for the period January to September, 1938.

	Condensed Milk		Evaporated Milk		Skim Milk
	Case goods	Bulk goods	Case goods	Bulk goods	Powder
	Lb.	Lb.	Lb.	Lb.	Lb.
January	432,689	204,426	5,756,016	63,342	1,079,773
February	344,599	253,437	5,320,376	31,153	964,782
March	430,053	484,978	8,245,340	65,190	1,354,536
April	536,249	377,572	10,495,117	54,932	2,067,606
May	797,323	447,573	13,211,635	33,557	2,860,486
June	329,629	470,419	15,152,156	47,189	3,457,691
July	662,408	358,171	11,485,875	71,572	3,205,637
August	274,949	378,635	9,839,984	67,064	2,992,820
September	455,945	358,798	7,963,978	58,926	2,691,056

4. Imports and Exports of Concentrated Milk Products, September, 1938, with Comparative Statistics for August, 1938 and September, 1937 (a)

Kind	Quantity Imported			Quantity Exported		
	September	August	September	September	August	September
	1938	1938	1937	1938	1938	1937
	Lb.	Lb.	Lb.	Lb.	Lb.	Lb.
Condensed Milk	(b)	355	-	151,900	56,400	327,300
Evaporated Milk	-	-	-	2,004,400	3,128,700	3,119,400
Milk Powder	(b)	133,366	148,107	342,300	353,500	347,500
Casein	(b)	28,093	350	-	-	-

5. Stocks of Concentrated Milk in Cold Storages, Warehouses, and Dairy Factories, October 1, 1938 with Comparative Statistics for September 1, 1938 and October 1, 1937 (c)

Kind	October 1, 1938	September 1, 1938	October 1, 1937
	Lb. (d)	Lb. (d)	Lb.
Condensed Milk	1,035,032	860,295	553,800
Condensed skim milk	672,210	632,570	351,604
Evaporated milk	21,974,360	22,846,216	14,904,910
Evaporated skim milk	-	-	30,146
Whole milk powder	1,815,331	2,649,746	722,591
Skim milk powder	6,632,133	6,068,356	2,073,472
Buttermilk powder	1,467,547	1,178,115	234,845
Cream powder	4,180	3,148	5,629
Casein	508,600	453,182	83,676
TOTAL	34,109,393	34,691,628	18,960,673

- (a) External Trade Report - "Imports and Exports of Milk and Its Products and Eggs".
- (b) Not yet available.
- (c) Agricultural Branch - "Stocks of Dairy and Poultry Products".
- (d) Owned and held by and / or for manufacturers.

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