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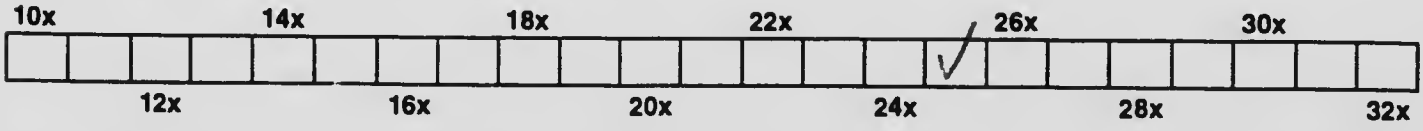

LABORATORY

OF THE

INLAND REVENUE DEPARTMENT

OTTAWA, CANADA

1901

BULLETIN No. 80

MILK

LABORATORY

OF THE

INLAND REVENUE DEPARTMENT

BULLETIN No. 80

MILK

OTTAWA, December 20, 1901.

W. J. GERALD, Esq.,
Deputy Minister of Inland Revenue.

SIR,—In the months of September and October last, in accordance with the instructions issued by you to the food inspectors, a collection of milk samples was made in various localities throughout the Dominion, and I have now to report to you the results of the examination of these. There were obtained in all 182 samples at the places detailed in the following list:—

Locality.	No. of Samples.		Locality.	No. of Samples.	
Nova Scotia—			Brought forward.....		78
Halifax.....	11		Ontario—		
Dartmouth...	4		Carleton Place.....	4	
		15	Arnprior.....	4	
New Brunswick—			Ottawa.....	13	
St. Andrews.....	2				21
St. Stephens.....	2		Ottawa.....	5	
Sussex.....	2		Peterboro'.....	6	
Moncton.....	6		Toronto.....	12	
		12	Port Hope.....	3	
Quebec—					26
St. Joseph.....	2		London.....	9	
Quebec.....	10		Sarnia.....	6	
Three Rivers.....	6		Goderich.....	3	
Montreal.....	6		Mitchell.....	3	
		24			21
Montreal.....	9		Manitoba—		
Montreal W.....	6		Winnipeg.....	11	
Granby.....	7		Deloraine.....	2	
St. Hyacinthe.....	5		Boissevain.....	2	
		27	Brandon.....	3	
					18
Carried forward.....		78	British Columbia—		
			Vancouver.....		18
			Total.....		182

The names of the parties from whom these samples were obtained, together with other particulars, are given in the tabulated statement appended to this report. In this the analytical results are also detailed, not only of the samples submitted to the district analysts, but of the duplicates supplied to the Department as well. Opposite the description of each sample will be found two lines of figures, the upper one being as reported by the district analyst, and in the lower one are given the results obtained in this laboratory. Classifying the whole number of samples collected according to the remarks by the analysts, the following statement is obtained:—

Provinces.	Genuine.	Doubtful, from differences in Analysis.	Partly Cream.	Under average in non-fatty solids.	Under average in Cream.	Under average in total solids.	Skimmed.	Partly skimmed.	Watered.	Total.
Nova Scotia	10	1	...	2	....	1	.....	.....	1	15
New Brunswick	8	...	2	1	...	1	.....	.....	...	12
Quebec	29	....	4	7	1	5	1	3	1	51
Ontario	34	5	5	1	16	6	....	1	..	68
Manitoba	10	1	3	1	2	1	....	.....	.....	18
British Columbia	11	1	..	....	..	6	...	.....	...	18
	102	8	14	12	19	20	1	4	2	182

In order to make a comparison of these figures with those of former years, it is necessary to deduct the samples which have been made doubtful by analytical differences from the total number collected, and also to add to the genuine samples those which have been characterized as 'partly cream,' because the latter were in former years generally described as genuine. After doing this the classification stands as follows:—

Provinces.	Genuine.	Uncertain	Adulterated.	Total.
Nova Scotia	16	3	1	14
New Brunswick	10	2	0	12
Quebec	33	13	5	51
Ontario	39	23	1	63
Manitoba	13	4	0	17
British Columbia	11	6	0	17
	116	51	7	174

Compared with the figures of former bulletins the following percentages result :—

	Genuine.	Uncertain.	Adulterated.
	p. c.	p. c.	p. c.
1895	70·8	22·3	6·9
1897	65·0	24·0	11·0
1898	73 0	23·0	4·0
1901	66·7	29·3	4·0

From this comparison it would appear that, while the percentage of undoubtedly adulterated samples has remained stationary, a decided increase in the number of those which have been regarded as uncertain is apparent. As a consequence it becomes necessary to ascertain the character of these uncertain samples, including those which show analytical differences or have been said to be 'partly cream.' Having regard to the cause of uncertainty these samples may be recapitulated as follows :—

	Number of Samples.
1. Differences in analysis	8
2. Admixture of cream	14
3. Deficiency in solids not fat	12
4. Deficiency in butter fat	19
5. Deficiency in total solids	20
Total	73

In those samples which are classed under 1. it has been found that the results reported by the district analyst differ very materially from those obtained in analysing the duplicates in this laboratory. According to section 9 of the Adulteration Act, the food inspector on collecting a sample is bound to divide it into three parts, one for the vendor, one for the Department and one for the district analyst. If, in making this division, he is not very careful to agitate the sample thoroughly, then differences are sure to arise in the analysis of the duplicates. Such want of care in mixing the samples is probably the cause of the differences. Indeed in the case of sample No. 20081 (Nova Scotia) the difference there shown has been traced to negligence of this sort on the part of the officer who collected the sample. Of course this does not exclude the possibility of error on the part of the analyst who may not thoroughly mix his duplicate before taking out the portion for analysis. Samples exhibiting differences in the analysis such as to materially affect the analyst's judgment regarding its genuineness may be recognized by the word 'doubtful' in the column containing the analysts' remarks.

A second cause of uncertainty is the presence of an abnormally high percentage of butter-fat. When this exceeds six per cent., especially if the other solids are abnormally low, there is good reason for believing that cream has been added by the vendor. This may be done for the purpose of supplying the inspector with an extra good sample, so good, in fact as to disqualify the article from ranking as 'milk'. The percentage of butter-fat in such cases frequently runs up to 7 or 8 per cent. and fully justifies the analyst in using the remark 'partly cream' and in withholding the opinion that the samples in question are of

'genuine' milk. The number of these sold is on the increase, and appears to be a proof that some milk dealers are anxious, in an irregular way, to improve the quality of their milk supply. It cannot, however, be said that samples 20936, 20937 and 20939 were sold to the public as milk, because they were obtained by the food inspector from parties who were delivering milk to one of our city dairy companies.

Respecting the delivery it is necessary to state that some milk dealers are in the habit of carrying in 'their waggons' in separate vessels, milks of different qualities, and it is suspected that this is for the purpose of supplying particular customers with milk of superior quality as regards butter-fat. The following samples were taken from three different cans in the same waggon which were said to contain only milk :—

No. of Sample.	Per cent. Butter-fat.	Per cent. Nonfatty solids.	Per cent. Total solids.
20584	3·25	8·73	11·98
20585	3·24	8·61	11·85
20586	8·36	8·61	16·97

It will be observed that the driver of this milk waggon had abundant opportunity, by judiciously mixing the contents of these cans, to vary the quality of the milk according to the more or less exacting demands of his customers. In the present collection instances of a similar nature may be studied by referring to samples 21060, 21061, 21068, 21069, 21075, 21076, 20930 and 20933.

The third cause of uncertainty as stated above lies in the deficiency of non-fatty solids while at the same time the percentage of butterfat is normal or even somewhat above the average of 3·75 per cent. Distinct instances of this sort are those numbered 21048, 21084 (Prov. Quebec). As I have said in a former report, 'it is difficult to account for 'the composition of this class of samples unless on the theory that they 'are the product of watering rich milk.' Greater precision than is at present practised would seem to be necessary in the use of the opinion 'under average in non-fatty solids' and I would suggest that it be applied only in cases where the solids not fat, are under 8·25 per cent. the butter-fat exceeds 3·75 and the total solids are not under 12 per cent.

The uncertain samples classed under 4, as being deficient in butter-fat, are usually indicated by the expression "under average in cream". It, of course, implies a suspicion of a slight amount of skimming, and is used ordinarily when the fat ranges between 3 and 3·5 per cent, and the non-fatty solids are normal. The latter will rarely be under 8.5 per cent, nor the total solids lower than 12 per cent. When the solids not fat amount to 8.5 or over, and the butter fat sinks lower than 3 per cent, it has been customary to report the sample as "partly skimmed," the uncertainty disappearing. When the percentage of butter fat sinks under 2 per cent the sample is usually regarded as "skimmed". Of this character there is one sample in the present collection.

Under 5 there have been distinguished another series of uncertain samples on account of their deficiency in total solids. This deficiency carries the percentage of the latter always below 12, with a corresponding reduction of the non-fatty solids. The use of the expression "under average in total solids" always indicates a suspicion of watering, and when in such cases the non-fatty solids sink under 8 per cent and the butter-fat below 3.75 per cent it is not unreasonable to use the term watered. There is one instance of this nature in the present collection.

The foregoing information regarding such 'doubtful' and uncertain samples was given in Bulletin No. 43 but I have thought it necessary to take this opportunity of enlarging upon the meaning of the expressions used, in order if possible to obtain greater precision in their use hereafter. Unless the district analysts are careful in using them, and unless uniformity prevails as regards the sense in which they are used, the worth of any comparison made between the collections of different years becomes invalidated and it becomes difficult to say whether any advance is being made in the suppression of milk adulteration. Of course, the district analysts, being independent officials, are not bound to follow such suggestions as the foregoing. It is their duty to exercise their own judgment, especially since no standard as regards the composition of milk, has yet been established in Canada, nor any 'limits of variability' fixed by Order in Council, as is possible under section 19 of the Adulteration Act.

It is necessary to state that in making this collection, bichromate of potash was used as a preservative in the proportion of very nearly 0.1 gramme to 100 ccm of milk, and in reporting the results the analysts were desired to make corrections accordingly. This salt was found to answer the purpose very well, especially in the case of the samples from Vancouver, B.C. By an inadvertence these were forwarded by freight and the transmission to Ottawa occupied 30 days. Nevertheless the samples were found to be in good condition for analysis, and it was easily possible to redistribute through the sample any separation of cream which had taken place.

I have to recommend the publication of this report.

I have the honour to be, sir,

Your obedient servant,

THOMAS MACFARLANE,

Chief Analyst.

RESULTS of the Examination of 182 Samples of Milk.

Date of Collection	Number of Sample.	Name and Address of Vendor.	Sp. gr. at 15°C.	Analysis.			Total Solids.	Remarks by Analysts.
				Butter Fat.	Non-fatty Solids.	Water.		
1901.		*Halifax, N.S.*		p. c.	p. c.	p. c.	p. c.	
Oct. 15..	20070	H. Burgess, Brunswick St.	1·0322	3·53	8·71	87·76	12·24	Genuine.
			1·0322	3·40	8·23	88·37	11·63	
" 15..	20071	Mrs. Merrigan, Upper Water St.	1·0337	4·31	9·44	86·25	13·75	"
			1·0342	4·17	8·99	86·84	13·16	
" 15..	20072	Miss Hills, Lockman St.	1·0326	3·48	8·72	87·80	12·20	"
			1·0332	3·24	8·28	88·48	11·52	
" 15..	20073	H. D. Grant	1·0329	3·83	8·80	87·37	12·63	"
			1·0332	3·59	8·48	87·93	12·07	
" 16..	20074	Scotia Pure Milk Co.	1·0306	4·08	8·26	87·66	12·34	Below average in solids; not fat.
			1·0302	3·88	7·93	88·19	11·81	
" 16..	20075	" "	1·0317	4·69	8·85	86·46	13·54	Genuine.
			1·0322	4·54	8·55	86·91	13·09	
" 16..	20076	" "	1·0308	4·30	8·43	87·27	12·73	"
			1·0307	4·02	7·98	88·00	12·00	
" 16..	20077	" " (Pasteurized)	1·0317	4·23	8·55	87·22	12·78	"
			1·0317	3·95	8·32	87·73	12·27	
" 16..	20078	Mrs. O'Brien, North St.	1·0317	4·34	8·64	87·02	12·98	"
			1·0317	4·16	8·11	87·73	12·27	
" 16..	20079	D. A. MacDonald, Agricola St.	1·0294	4·19	8·37	87·44	12·56	Below average in solids; not fat.
			1·0302	4·26	7·71	88·03	11·97	
" 16..	20080	Mrs. Carroll, Grafton St.	1·0270	2·76	7·26	89·98	10·02	Watered; adulterated.
			1·0272	2·79	6·73	90·48	9·52	
		Dartmouth, N.S.						
" 17..	20081	R. Laidlaw.	1·0326	2·94	8·69	88·37	11·63	Doubtful, sample not properly mixed before dividing.
			1·0282	6·26	7·93	85·81	14·19	

"	17..	20081	R. Laidlaw.....	1·0326 1·0282	2·94 6·26	8·69 7·93	88·37 85·81	11·63 14·19	Doubtful, sample not properly mixed before dividing.
"	17..	20082	Mrs. Werner.....	1·0320 1·0312	4·59 4·14	8·74 8·28	86·67 87·28	13·33 12·72	Genuine.
"	17..	20083	Mrs. Myers.....	1·0320 1·0322	5·32 5·10	8·92 8·57	85·76 86·33	14·24 13·67	"
"	17..	20084	Mrs. A. Griffin.....	1·0294 1·0292	3·70 3·62	7·88 7·61	88·42 88·75	11·58 11·27	Below average in solids not fat and total solids.
			St. Andrews, N.B.						
"	15..	17806	Joseph Denley.....	1·0304 1·0309	3·60 3·48	8·27 7·77	88·13 88·75	11·87 11·25	Solids under average.
"	15..	17807	James McIlowell.....	1·0310	4·63	8·43	86·91	13·06	Genuine.
			St. Stephens, N.B.						
"	16..	17808	Henry Hanson.....	1·0322 1·0324	4·96 5·00	9·03 8·45	86·01 86·55	13·99 13.45	"
"	16..	17809	Joseph S. Farthing.....	1·0292 1·0288	6·31 7·82	8·32 7·76	85·37 84·42	14·63 15·58	Partly cream.
			Sussex, N.B.						
"	21..	17810	Sussex Milk Co.....	1·0318 1·0327	4·19 4·24	8·92 8·41	86·89 87·35	13·11 12·65	Genuine.
"	21..	17811	" "	1·0320 1·0327	3·59 3·49	8·62 8·15	87·79 88·36	12·21 11·64	"
			Moncton, N.B.						
"	23..	17812	A. J. Steeves.....	1·0288 1·0299	4·07 3·99	8·03 7·57	87·90 88·44	12·10 11·56	Solids not fat are below average.
"	23..	17813	C. F. Vincent.....	1·0336 1·0335	5·19 5·07	9·40 8·96	85·41 85·97	14·59 14·03	Genuine.
"	23..	17814	C. L. Jones.....	1·0318 1·032	4·13 4·11	8·77 8·35	87·10 87·54	12·90 12·46	"
"	23..	17815	F. H. Frites.....	1·0246 1·0243	7·15 6·84	7·28 6·92	85·57 86·24	14·43 13·76	Partly cream, and deficient in non-fatty solids
"	25..	17816	Geo. E. Fisher.....	1·0315 1·0334	4·98 3·15	8·76 8·46	86·26 88·39	13·74 11·61	Genuine.
"	25..	17817	Chas. Gagnon.....	1·0302 1·0304	4·24 4·00	8·40 8·01	87·36 87·99	12·64 12·01	"

The first line of figures in each of the foregoing samples shows the results reported by M. Bowman, official analyst, Halifax, N.S.
The second line shows the analysis by Miss Margaret Tyrrell, Inland Revenue Laboratory, Ottawa.

RESULTS of the Examination of 182 Samples of Milk—*Continued.*

Date of Collection	Number of Sample.	Name and Address of Vendor.	Sp. gr. at 15°C.	Analysis.			Total Solids.	Remarks by Analysts.
				Butter-Fat.	Non-fatty Solids.	Water.		
1901.		*St. Joseph, P.Q.*		p. c.	p. c.	p. c.	p. c.	
Sept. 11..	21039	Hubert Samson.	1·0348 1·0347	1·67 1·49	8·32 8·21	90·91 90·30	9·99 9·70	Skimmed and therefore adulterated.
" 11..	21040	Jean Vezina..	1·0333 1·0327	3·23 2·74	8·20 8·41	88·57 88·85	11·43 11·15	Under average in butter fat and other solids.
		Quebec.						
" 11..	21041	Madame Guay	1·0328 1·0306	3·96 3·70	8·32 8·15	87·72 88·15	12·28 11·85	Genuine.
" 11..	21042	F. X. Dumont	1·0333 1·034	3·21 3·10	8·78 8·59	88·01 88·31	11·99 11·69	Under average in butter fat; doubtful.
" 11..	21043	Joseph Pouliot, Masson St.....	1·0323 1·034	4·60 4·36	8·51 8·37	86·89 87·27	13·11 12·73	Genuine.
" 11	21044	John Dundon, Hedley Lodge	1·0323 1·0317	4·03 3·84	8·50 8·36	87·47 87 80	12·53 12·20	"
" 11..	21045	Theo. Trudel.....	1·0328 1·0317	4·18 3·89	8·52 8·45	87·30 87·66	12·70 12·34	"
" 11..	21046	B. Guerin	1·0323 1·0317	4·19 4·86	9·55 8·39	86·26 86·75	13·74 13·25	"
" 11..	21047	Mathias Langlois, Delard St..	1·0317 1·0306	4·27 4·31	8·52 8·48	87·21 87·21	12·79 12·79	"
" 11..	21048	Ernest Langlois, 59 St. Luke St..... ...	1·0302 1·0301	4·54 4·33	8·06 7·81	87·40 87·86	12·60 12·14	Under average in solids; not fat.
" 11 .	21049	Josh. Paradis, 8 Kirouack St.....	1·0323 1·0317	4·71 4·47	8·60 8·38	86·69 87 15	13.31 12·85	Genuine.
" 11..	21050	Ocative Dupuis, 317 St. Oliver St	1·0302	5·00	8·27	86·73	13·27	"

" 11..	21050	Ocative Dupuis, 317 St. Oliver St	1·0302	5·00	8·27	86·73	13·27	"

		Three Rivers, P.Q.						
" 17..	21051	W. Pratte.....	1·0344 1·0335	3·64 3·39	8·77 8·65	87·59 87·96	12·41 12·04	"
" 17..	21052	E. Leblanc.....	1·0344 1·035	3·84 3·51	8·93 8·89	87·23 87·60	12·77 12·40	"
" 17..	21053	A. Beaudry.....	1·0329 1·033	3·85 3·52	8·69 8·53	87·46 87·95	12·54 12·05	"
" 17..	21054	P. Gouin.	1·0336 1·033	3·14 2·92	8·53 8·39	88·33 88·69	11·67 11·31	Under average in butter fat.
" 17..	21055	Theo. Beaudry.....	1·0333 1·0335	4·18 3·92	8·83 8·65	86·99 87·43	13·01 12·57	Genuine.
" 17..	21056	Thos. Fortin..	1·0324 1·0325	4·17 3·92	3·52 8·36	87·31 87·72	12·69 12·28	"
		Montreal.						
Oct. 20..	21057	J. L. Trenholm, Blue Bonnets.....	1·0309 1·0296	6·01 5·79	8·46 8·25	85·53 85 96	14·47 14·04	Partly cream.
" 20..	21058	E. Nockle, 1511 St. Hubert..	1·0325 1·0322	4·32 4·11	8·78 8·61	86·90 87 28	13·10 12·72	Genuine.
" 20..	21059	Archie Drummond, Petite Côte.....	1·0335 1·0322	2·87 2·76	8·63 8·32	88·50 88·92	11·50 11·08	Too low in butter fat; partly skimmed; adulterated.
" 20..	21060	A. B. Bishop, St. Laurent..	1·0303 1·0291	5·64 5·56	8·30 7·90	86·06 86·54	13·94 13·46	Partly cream.
" 20..	21061	" "	1·0308 1·0306	4·74 4·54	8·37 8·20	86·89 87·26	13·11 12·74	Genuine.
" 20..	21062	W. A. Cornell, Point Aux Trembles.... ..	1·0309 1·0311	3·02 2·84	8 00 7·89	88·98 89·27	11·02 10·73	Low in butter fat and other solids; probably watered.

The first line in each of the foregoing samples shows the results reported by Dr. M. Fiset, Official Analyst, Quebec.
The second line shows the analysis by Miss M. Tyrrell, Inland Revenue Laboratory, Ottawa.

RESULTS of Examination of 182 Samples of Milk—*Continued.*

Date of Collection	Number of Sample.	Name and Address of Vendor.	Sp. gr. at 15°C.	Analysis			Total Solids.	Remarks by Analysts.
				Butter Fat.	Non-fatty Solids.	Water.		
1901.		*Montreal.*		p. c.	p. c.	p. c.	p. c.	
Oct. 5..	21066	J. Bremner, Côte St. Laurent	1·032	3·79	8·35	87·86	12·14	Under average in non-fatty solids.
			1·0323	3·54	8·34	88·12	11·88	
" 5..	21067	" "	1·031	4·87	8·01	87·12	12·88	" "
			1·0318	3·92	8·48	87·60	12·40	
" 5..	21068	U. Beauchamp, 450 Letourneau	1·0292	4·44	7·89	87·67	12·33	" "
			1·0298	4·20	8·08	87·72	12·28	
" 5..	21069	" "	1·0274	6·97	7·83	85·20	14·80	Partly cream.
			1·028	6·90	7·47	85·63	14·37	
" 5..	21070	Thos. Hale, Sault au Recollect	1·0332	3·88	8·77	87·35	12·65	Unadulterated
			1·0335	3·92	8·52	87·56	12·44	
" 5..	21071	A. D. Howat, 255 Hibernia	1·0337	4·16	9·03	86·81	13·19	"
			1·034	4·22	8·65	87·13	12·87	
" 5 .	21072	" "	1·0352	3·80	9·30	86·90	13·10	"
			1·035	3·77	9·02	87·21	12·79	
" 5..	21073	Wm. Reinhold, 990 Sanguinet	1·0343	2·70	8·68	88·62	11·38	Adulterated, partly skimmed.
			1 034	2·69	8·56	88·75	11·25	
" 5..	21074	" "	1·0345	2·63	8·79	88·58	11·42	" "
			1·035	2·67	8·65	88·68	11·32	
		Granby, P.Q.						
Oct. 11..	21075	A. E. Ashton	1·0264	8·76	7·50	83·74	16·26	Partly cream.
			1·0266	7·87	7·94	84·19	15·81	
" 11..	21076	"	1·032	3·78	7·98	88·24	11·76	Under average in total solids and solids not fat.
			1·0317	3·59	8·31	88 10	11·90	
" 11..	21077	"	1·0294	3·27	7·16	89·57	10 43	Adulterated, watered.
			1·0296	2·98	7·52	89·50	10·50	

"	11..	21077	"	1·0294 1·0296	3·21 2·98	7·16 7·52	89·63 89·50	10·42 10·50	
"	11..	21078	T. Arrowsmith	1·0326 1·0327	3·95 3·75	8·24 8·66	87·81 87·59	12·19 12·41	Under average in non-fatty solids.
"	11..	21079	"	1·033 1·0337	3·98 3·69	8·44 8·88	87·58 87·43	12·42 12·57	Unadulterated.
"	11..	21080	"	1·0325 1·0327	4·14 3·65	8·41 8·57	87·45 87·78	12·55 12·22	"
"	11..	21081	W. E. Bowker.....	1·0316 1·0312	4·69 4·44	8·29 8·62	87·02 86·94	12·98 13·06	"
			Montreal, West.						
"	16..	21082	Park Bros.....	1·0324 1·0322	3·68 3·42	8·31 8·27	88·01 88·31	11·99 11·69	Under average in total solids.
"	16..	21083	"	1·0324 1·0322	3·53 3·24	8·40 8·35	88·07 88·41	11·93 11·59	Unadulterated.
"	16..	21084	Clement Petigean.....	1·031 1·0327	3·96 3·69	8·19 8·11	87·85 88·20	12·15 11·80	Under average in solids not fat.
"	16..	21085	"	1·0306 1·0312	4·80 4·51	8·22 8·12	86·98 87·37	13·02 12·63	" "
"	16..	21086	H. Candlist.....	1·0327 1·0322	4·26 3·96	8·70 8·47	87·04 87·57	12·96 12·43	Unadulterated.
"	16..	21087	"	1·0334 1·0332	4·00 3·67	8·74 8·68	87·26 87·65	12·74 12·35	"
			St. Hyacinthe, P.Q.						
"	17..	21088	L. Marchesault.....	1·0328 1·0322	4·05 3·70	8·35 8·44	87·60 87·86	12·40 12·14	"
"	17	21089	E. Clapin	1·0328 1·0332	3·64 3·38	8·59 8·42	87·77 88·20	12·23 11·80	"
"	17..	21090	"	1·032 1·0322	4·67 4·34	8·34 8·32	86·99 87·34	13·01 12·66	"
"	17..	21091	Louis Carrier.....	1·0321 1·0322	4·41 4·17	8·47 8·38	87·12 87·45	12·88 12·55	"
"	17..	21092	Josh. Laberge	1·0328 1·0322	4·68 4·48	8·53 8·46	86·79 87·06	13·21 12·94	"

The first line in each of the foregoing samples shows the results reported by A. L. Tourchot, official analyst, St. Hyacinthe.
The second line shows the analysis by Miss M. Tyrrell, Inland Revenue Laboratory, Ottawa.

RESULTS of the Examination of 182 Samples of Milk—*Continued.*

Date of Collection	Number of Sample.	Name and Address of Vendor.	Sp. gr. at 15°C.	Analysis.			Total Solids.	Remarks by Analyst.
				Butter Fat.	Non-fatty Solids.	Water.		
1901.		*Carleton Place, Ont.*		p. c.	p. c.	p. c.	p. c.	
Sept. 5..	20922	Jas. Hendry	1·0344	3·60	9·75	86·65	13·35	Genuine.
			.....	6·13	8·52	85·35	14·65	
" 5..	20923	"	1·0354	3·18	8·42	88·40	11·60	Below average in fat and total solids.
			.....	2·69	8·67	88·64	11·36	
" 5..	20924	Wm. Bennett	1·0307	2·83	7·73	89·44	10·56	Doubtful.
			.....	3·16	8·71	88·13	11·87	
" 5..	20925	"	1·0314	2·68	7·60	89·72	10·28	"
			.....	6·16	8·37	85·47	14·53	
		Arnprior, Ont.						
" 5..	20926	P. P. Farmer (from pint bottle)	1·0393	2·96	8·24	88·80	11·20	"
			.....	6·25	8·53	85·22	14·78	
" 5..	20927	" (from quart bottle)	1·0350	4·33	8·92	86·75	13·25	Genuine.
			.....	12·30	7·67	80·03	19·97	
" 5..	20928	Thos. Havey	1·0348	3·14	9·88	86·98	13·02	Doubtful.
			.....	3·81	8·74	87·45	12·55	
" 5..	20929	"	1·0362	3·58	9·19	87·23	12·77	Genuine.
			.....	3·70	8·80	87·50	12·50	
		Ottawa.						
" 9.	20930	W. Graham, a sample from each can in wagon.	1·0368	7·29	9·37	83·34	16·66	Partly cream.
			1·0304	7·21	8·27	81·52	15·48	
" 9..	20931	" "	1·0357	5·57	8·59	85·84	14·16	Genuine.
			1·0309	5·00	8·12	86·86	13·14	
" 9..	20932	" "	1·0377	5·64	8·61	85·75	14·25	"
			1·0314	4·78	8·18	87·04	12·96	

				1·0314	4·78	8·18	87·04	12·96	
"	9..	20933	" " ..	1·0380	4·78	9·19	86·05	13·97	
				1·0334	4·23	8·59	87·18	12·82	
"	9..	20934	" " ..	1·0350	5·28	8·82	85·90	14·10	"
				1·0329	4·33	8·75	86·92	13·	
"	9..	20935	" " ..	1·0369	5·31	8·90	85·79	14·21	
				1·0324	4·70	8·63	86·67	13·33	
Sept.	9..	20936	Taken from wagons at Dairy Company's Offices, Ottawa, before delivery.	1·0269	20·72	7·40	71·88	28·12	Partly cream.
				.....	19·55	6·54	73·91	26·09	
"	9..	20937	" " " ..	1·0230	20·86	4·91	74·23	25·77	"
				1·0146	17·14	6·84	76·02	23·98	
"	9..	20938	" " " ..	1·0380	3·25	11·11	85·64	14·36	Genuine.
				1·0299	5·61	8·15	86·24	13·76	
"	9.	20939	" " " ..	1·0292	12·27	9·67	78·06	21·94	Partly cream.
				1·0177	12·93	7·41	79·66	20·34	
"	9..	20940	" " " ..	1·0286	8·12	9·68	82·20	17·80	"
				1·0258	8·85	8·04	83·11	16·89	
"	9	20941	Taken from Dairy Company's wagons on street as being supplied to customers.	1·0340	3·96	9·64	86·40	13·60	Genuine.
				1·032	3·59	8·38	88·03	11·97	
"	9..	20942	" " " ..	1·0378	3·39	8·71	87·90	12·10	"
				1·0325	3·22	8·58	88·20	11·80	

The first line in each of the foregoing samples shows the results reported by Dr. F. X. Valade, Official Analyst, Ottawa.
The second line shows the analysis by Miss M. Tyrrell, Inland Revenue Laboratory, Ottawa.

Peterborough, Ont.

Oct.	9..	22501	J. H. Bell....	1·0308	3·12	9·05	87·83	11·17	Under average in cream.
				1·033	3·45	8·44	88·11	11·89	
"	9..	22502	"	1·0286	3·26	8·89	87·85	12·15	"
				1·0319	3·27	8·15	88·58	11·42	
"	9..	22503	"	1·047	3·66	9·65	86·69	13·31	Genuine.
				1·0336	3·84	8·94	87·22	12·78	
"	9 .	22504	T. Lillico	1·0312	3·94	9·22	86·84	13·16	"
				1·0314	3·99	8·44	87·59	12·41	
"	9..	22505	"	1·0315	3·79	9·27	86·94	13·06	"
				1·0320	3·76	8·50	87·74	12·26	
9	9..	22506	"	1·0334	4·01	9·14	86·85	13·15	"
				1·0314	3·97	8·44	87·59	12·41	

RESULTS of the Examination of 182 Samples of Milk—*Continued.*

Date of Collection	Number of Sample.	Name and Address of Vendor.	Sp. gr. at 15 C.	Analysis.			Total Solids.	Remarks by Analysts.
				Butter Fat.	Non Fatty Solids.	Water		
1901.		*Toronto.*		p. c.	p. c.	p. c.	p. c.	
Oct. 10.	22507	R. W. Dockeray, 175 Christie St.....	1·048	3·78	8·80	87·42	12·58	Genuine.
			1·0319	3·60	8 19	88·21	11·79	
" 10..	22508	W. J. McColl, Eglington, P. O...	1 0324	3·28	9·11	87 61	12 39	Under average in cream.
			1·0319	3·18	8 23	88·59	11 41	
" 10..	22509	E. Leadley, 105 Markham St..... ...	1·5311	3·32	9·24	87·44	12·56	"
			1·0324	3·24	8·38	88·38	11 62	
" 10..	22510	" "	1·0331	3·35	9 21	87·46	12·54	"
			1·0334	3 26	8 34	88 40	11·60	
" 10..	22511	City Dairy Co. (from wagon on street).	1·031	3·24	9 02	87·74	12·26	"
			1·0309	3 19	8·07	88 74	11·26	
" 10..	22512	Oakville Dairy Co. (from wagon on street)..	1·0283	2·97	8·12	88·91	11·19	Under average in total solids.
			1·0294	2·86	7 16	89 98	10 02	
" 10..	22513	S. Price & Son, King St.....	1·0311	3·75	8 78	87 47	12·53	Genuine.
			1·0314	3·10	8·23	88·67	11·33	
" 10..	22514	" "	1·0307	3·43	9·00	87·57	12·43	"
			1 0319	3·23	8 12	88·65	11·35	
" 10..	22515	City Dairy Co., (taken from wagons on delivery at company's premises, Toronto).	1·033	3·32	8·80	87·88	12·12	Under average in cream.
			1·0319	3·27	8 19	88·54	11·46	
" 10..	22516	" " " ..	1·0338	3·52	9 25	87·23	12·77	Genuine.
			....	3·47	8·68	87·85	12·15	
" 10..	22517	" " " ..	1·0305	3·13	8·80	88 07	11 93	Under average in cream
			1·0319	3·06	8 13	88·81	11·19	
" 10..	22518	" " " ..	1·0342	3·25	9·35	87·40	12 60	"
			1·0334	3·15	8 62	88·23	11·77	

		Port Hope.						
" 11 .	22519	G. R. Race	1·0308 1·0312	3·34 3·35	9·11 8 22	87·55 88·43	12·45 11·57	"
" 11..	22520	Geo. Bennett.....	1·0334 1·0337	2·46 2·60	9·23 8·41	88·31 88·99	11·69 11·01	Partly skimmed and therefore adulterated.
" 11..	22521	"	1·0318 1·0327	3·00 3·17	11·00 8·32	86·00 88·51	14·00 11·49	Under average in cream.
		Ottawa.						
Oct. 21..	22571	Ottawa Dairy Company, from cans, as being delivered on company's premises.	1·0312 1·030	5·71 6·21	9·36 8·10	84·93 85·69	15·07 14·31	Genuine.
" 21..	22572	" " "	1·0302 1·030	5·46 5·35	8·89 7·88	85·65 86·77	14·35 13·23	"
" 21..	22573	" "	1·0315 1·032	4·91 4·60	9·23 8·27	85·86 87·13	14·14 12·87	"
" 21..	22574	Ottawa Dairy Company, from milk wagons on steeet as being delivered to customers.	1·0312 1·0315	3·86 3·87	9·00 8·31	87·14 87·82	12·86 12·18	"
" 21..	22575	" " .. .	1·0308 1·032	5·82 3·82	7·38 8·55	86·80 87·63	13·20 12·37	Under average in solids, not fat.

The first line in each of the foregoing samples shows the results reported by Dr. W. H. Ellis, Official Analyst, Toronto.
The second line shows the analysis by Miss M. Tyrrell, Inland Revenue Laboratory.

		London, Ont.						
Sept. 11..	21954	Sanitary Dairy Co.: From wagon on street..	1·0323 1·0260	2·57 7·67	8·60 7·47	88·83 84·86	11·17 15·14	Doubtful.
" 11..	21955	John Rodgers....	1·0326 1·0323	3·22 3·23	8·61 8·01	88·17 88·76	11·83 11·24	Below average in cream.
" 11..	21956	Chas. O'Brien...	1·0316 1·0312	3·49 3·32	8·29 7·77	88·22 88·91	11·78 11·09	Under average in total solids.
" 11..	21957	Frank Fortner, 406 Colbourne St.....	1·0333 1·0333	3·10 2·66	8·71 8·28	88·19 89·06	11·81 10·94	Under average in cream.
" 11..	21958	Sanitary Dairy, company's factory....	1·0325 1·0323	3·71 3·43	8·61 8·08	87·68 88·49	12·32 11·51	Genuine.
" 11..	21959	John Hill, Forest City Dairy..	1·0312 1·0312	3 17 2·55	8·21 7·80	88·62 89·65	11·38 10·35	Under average in cream and in solids not fat. Probably adulterated.

Results of the Examination of 132 Samples of Milk—*Continued.*

Date of Collection.	Number of Sample.	Name and Address of Vendor.	Sp. gr. at 15°C.	Analysis.			Total Solids.	Remarks by Analysts.
				Butter Fat.	Non Fatty Solids.	Water.		
1901.		*London, Ont,*—Concluded.		p. c.	p. c.	p. c.	p. c.	
Sept. 11..	21960	Sanitary Dairy Co.: From factory....	1·0321	3·82	8·54	87·64	12·36	Genuine.
			1·0318	3·22	8·32	88·46	11·54	
" 11..	21961	" "	1·0314	3·05	8·18	88·77	11·23	Below average in cream and in solids not fat.
			1·0312	2·72	7·83	89·45	10·55	Probably adulterated by addition of water.
" 11..	21962	" "	1·0320	3·95	8·38	87·67	12·33	Genuine.
			1·0308	3·65	8·17	88·18	11·82	
		Sarnia, Ont.						
" 13..	21963	J. Smith.....	1·0310	3·69	8·23	88·08	11·92	Under average in total solids.
			1·0318	3·55	8·06	88·39	11·61	
" 13..	21964	Wm. Battle....	1·0272	5·80	7·83	86·37	13·63	Partly cream.
			1·0265	5·67	7·62	86·71	13·29	
" 13..	21965	Chas. Carr.....	1·0320	3·29	8·43	88·28	11·72	Below average in cream.
			1·032.	3·16	8·32	88·52	11 48	
" 13..	21966	N. L. Hiller.....	1·0307	4·49	8·46	87·05	12·95	Genuine.
			1·0302	4·37	8·21	87·42	12·58	
" 13.	21967	John McWhorter.....	1·0316	3·88	8·72	87·40	12·60	"
			1·0328	3·71	8·46	87·83	12·17	
" 13..	21968	Andrew McRitchie.....	1·0328	5·36	9·24	85·40	14·60	" very rich milk.
				4·83	8·59	86·58	13·42	
		Goderich, Ont.						
" 17..	21969	Gordon Beasett.....	1·0319	3·40	8·56	88·04	11·96	Under average in cream.
			1·031	3·32	7·92	88·76	11·24	
" 17..	21970	John Porter, jr.....	1·0312	4·41	8·42	88·17	12·83	Genuine.
			1·0315	3·92	8·13	87·95	12·05	
" 17..	21971	Gordon Imrie.....	1·0329	3·60	8·44	87·96	12·04	"
			1·033	3·08	8·23	88·69	11·31	

				1·0315	3·92	8·13	87·95	12·05	
"	17..	21971	Gordon Imrie	1·0329 1·033	3·60 3·08	8·44 8·23	87·96 88·69	12·04 11·31	"

Mitchell, Ont.

"	18..	21972	Westie Parrish	1·0306 1·0312	4·06 4·04	8·40 8·08	87·54 87·88	12·46 12·12	"
"	18..	21973	Geo. Milligan	1·0308 1·0322	4·23 3·89	8·47 8·20	87·30 87·91	12·70 12·09	"
"	18..	21974	Allen Casey	1·0323 1·0321	4·25 3·77	8·43 8·23	87·32 88·00	12·68 12·00	"

The first line in each of the foregoing samples shows the results reported by Mr. F. T. Harrison, Official Analyst, London, Ont.
The second line shows the analysis by Miss M. Tyrrell, Inland Revenue Laboratory, Ottawa.

Winnipeg, Man.

Oct.	2..	17362	C. Johnson	1·0316 1·0347	4·27 4·28	8·72 8·61	87·01 87·11	12·99 12·89	Genuine
"	2..	17363	Hy. Corbeil	1·0313 1·0323	4·22 3·92	8·76 8·58	87·02 87·50	12·98 12·50	"
"	2..	17364	Aberdeen Ave. Dairy	1·0253 1·0276	4·44 4·14	7·15 7·11	88·40 88·75	11·60 11·25	Non fatty solids below average.
"	2..	17365	J. W. Ferguson	1·0283 1·0317	3·71 3·40	7·80 7·80	88·49 88·80	11·51 11·20	Below average.
"	2..	17366	W. S. Craig	1·0313 1·0327	5·59 5·17	8·89 8·55	85·52 86·28	14·48 13·72	Genuine.
"	2..	17367	Wm. Craig	1·0288 1·0296	7·29 6·99	8·74 8·16	83·97 84·85	16·03 15·15	Partly cream.
"	2..	17368	J. G. Dolman	1·0311 1·0333	5·02 4·54	8·84 8·70	86·14 86·76	13·86 13·24	Genuine.
"	2..	17369	E. Taylor, Dorset Dairy	1·0288 1·0296	7·83 7·23	8·65 8·33	83·52 84·44	16·48 15·56	Partly cream.
"	2..	17370	E. W. Edwards, Toronto Dairy	1·0308 1·0313	5·55 4·98	8·92 8·57	85·53 86·45	14·47 13·55	Genuine.
"	2..	17371	Stone Stoneson	1·0316 1·0327	5·31 4·76	8·91 8·58	85·78 86·66	14·22 13·34	"
"	2..	17372	S. Bibeau, St. Boniface Dairy	1·0307 1·0291	6·00 6·13	8·90 8·62	84·50 85·25	15·50 14·75	Partly cream.

RESULTS of the Examination of 182 Samples of Milk—*Concluded.*

Date of Collection.	No. of Sample.	Name and Address of Vendor.	Sp. gr. at 15°C.	Analysis.			Total Solids.	Remarks by Analyst.
				Butter Fat.	Non-fatty Solids.	Water.		
1901.		*Deloraine, Man.*		p. c.	p. c.	p. c	p. c.	
Oct. 4..	17373	Mr. Castle.....	1·0343	4·24	9·42	86·34	13·66	Genuine.
			1·0327	4·69	8·63	86·68	13·32	
" 5.	17374	Mrs. Shanks..	Bottle broken in transit.....					
			1·0317.	2·92	7·93	89·15	10·85	Doubtful.
		Boissevain, Man.						
" 5..	17375	J. H. McCalpin....	1·0320	4·42	8·86	86·72	13·28	Genuine.
			1·0342	3·90	8·88	87·22	12·78	
" 5..	17376	D. McCuag.....	1·0330	3·38	8·94	87·68	12·32	Under average in cream.
			1·0357	2·96	8·91	88·13	11·87	
		Brandon, Man.						
" 10..	17377	Andrew Mutter	1·0313	3·34	8·50	88·16	11·84	Below average.
			1·0312	3·65	8·37	87·98	12·02	
" 10..	17378	Geo. Coombe.....	1·0333	4·67	9·24	86·09	13·91	Genuine.
			1·0306	5·92	8·34	85·74	14·26	"
" 10..	17379	A. Milly	1·0322	3·86	8·81	87·33	12·67	"
			1·0317	4·25	8·35	87·40	12·60	
		Vancouver, B.C.						
Oct. 11..	21612	C. H. Brown.	1·030	4·02	8·08	87·90	12·10	Genuine.
				3·66	7·99	88·35	11·65	
" 11..	21613	D. Beare....	1·031	3·62	7·64	88·74	11·26	Below average in non-fatty solids.
				3·99	8·47	87·54	12·46	

The first line in each of the foregoing samples shows the results reported by E. B. Kenrick, Official Analyst, Winnipeg, Man.
The second line shows the analysis by Miss M. Tyrrell, Inland Revenue Laboratory, Ottawa.

1·031	3·62 3·99	7·64 8·47	88·74 87·54	11·26 12·46	Below average in non-fatty solids.

" 11..	21614	J. G. Kirkwood	1·030	3·32 3·31	8·08 8·55	88·60 88·14	11·40 11·86	Under average in total solids.
" 11..	21615	W. Clarke	1·032	4·83 4·80	8·31 8·71	86·86 86·49	13·14 13·51	Genuine.
" 11..	21616	Valley Dairy Co.	1·031	3·22 3·15	8·05 8·43	88·73 88·42	11·27 11	Under average in total solids.
" 11..	21617	J. N. Bond	1·030	2·99 2·91	8·01 8·42	89·00 88·67	11·00 11·33	Under average in fat and total solids; a poor milk.
" 12..	21618	Eligh & Metcalfe	1·031	3·75 3·61	8·21 8·48	88·04 87·91	11·96 12·09	Genuine.
" 12..	21619	J. W. McLeod	1·032	3·78 3·93	8·68 8·92	87·54 87·15	12·46 12·85	"
" 12..	21620	T. F. Newington	1·031	4·03 3·82	8·00 8·46	87·97 87·72	12·03 12·28	"
" 12..	21621	J. Wolfe	1·030	4·87 3·54	7·80 8·35	87·32 88·11	12·68 11·89	"
" 12..	21622	D. McDougall	1·031	3·95 3·87	8·28 8·80	87·77 87·33	12·23 12·67	"
" 12..	21623	T. Moserop	1·032	4·15 4·13	8·54 8·87	87·31 87·00	12·69 13·00	"
" 14..	21624	D. McDougall	1·030	3·99 3·92	8·08 8·56	87·93 87·52	12·07 12·48	"
" 14..	21625	J. McGeer	1·030	3·65 3·56	8·00 8·16	88·35 88·28	11·65 11·72	Below average in total solids.
" 14..	21626	Jas. Armstrong	1·031	3·98 3·91	8·06 8·49	87·96 87·66	12·04 12·34	Genuine.
" 14..	21627	N. Newman	1·029	2·80 3·63	7·68 8·56	89·52 87·81	10·48 12·19	Doubtful.
" 14..	21628	S. Grass	1·031	3·66 3·01	8·22 7·92	88·12 89·07	11·88 10·93	Below average in total solids.
" 14..	21629	Valley Dairy	1·030	4·26 4·17	7·85 8·59	87·89 87·24	12·11 12·76	Genuine.

The first line in each of the foregoing samples shows the results reported by Dr. C. J. Fagan, Official Analyst, British Columbia.
The second line shows the analysis by T. Macfarlane, Chief Analyst, Inland Revenue Laboratory, Ottawa.