



O. H. M. S.

*W. J. Gerald*  
Deputy Minister.

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LABORATORY

OF THE

INLAND REVENUE DEPARTMENT

OTTAWA, CANADA

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BULLETIN No. 114

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COMMERCIAL EXTRACT OF LEMON

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OTTAWA, January 16, 1906.

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

SIR,—I beg to submit herewith a report from Mr. A. McGill on Commercial Extract of Lemon, accompanied by a tabulated statement, showing the results of examining the samples collected in August and September last in accordance with your instructions. I beg to recommend the publication of the whole as Bulletin No. 114.

I have the honour to be, sir,

Your obedient servant,

THOMAS MACFARLANE,  
*Chief Analyst.*

OTTAWA, January 16, 1906.

THOS. MACFARLANE, Esq., F.R.S.C., &c.,  
Chief Analyst.

SIR,—I beg to hand you a report upon one hundred and ten (110) samples of Commercial Extract of Lemon. These sample represent the article as sold in eleven of the twelve inspectoral districts of Canada. No collections were made in the district of Calgary.

Extract of Lemon is very largely used for flavouring pastry, &c. Its name implies the possession of the characteristic flavour of lemons. This is known to be due to an essential oil (Oil of Lemons) which is present in the lemon peel. Oil of lemons is easily soluble in strong alcohol; and the British Pharmacopœia prescribes alcohol of 90 per cent strength as the proper solvent for lemon oil. According to the directions of the Pharmacopœia of 1898, one part by weight of fresh lemon peel is to be extracted by four parts, by volume, of alcohol of 90 per cent. The product is known as tincture of lemon.

The *Spiritus Limonis* (Spirit of Lemon) of the United States Pharmacopœia, is made from oil of lemons, grated lemon peel and 95 per cent alcohol, and must contain 5 per cent of lemon oil.

The percentage of oil of lemon required to be present in the B. P. tincture is not defined. It may however be stated as not less than such an amount as can be extracted from one part (by weight) of fresh lemon peel, when macerated with four parts (volume) of 90 per cent alcohol.

It is quite true that no legal or authoritative definition of extract of lemon exists; and we are not warranted in holding that commercial extract of lemon must be identical in character with pharmacopœial tincture of lemon. At the same time, it seems impossible that there should be any essential difference between the two, if extract of lemon is to possess, in any high degree, the properties of a flavouring extract. The pharmacopœial tincture is employed chiefly, or solely, for flavouring purposes. As already stated, it owes its value to the contained oil of lemon.

Oil of lemon consists chiefly of terpenes, which are only soluble in strong alcohol. It is therefore impossible to prepare a genuine extract of lemon without the use of strong alcohol. While these terpenes constitute about 90 per cent of oil of lemon, there is present, also, from 4 to 8 per cent of an aldehyde, known as citral; and this aldehyde contributes largely, if not chiefly, to the total flavour. Other substances are present in comparatively small amount; but the total flavor of the extract (or tincture) is made up of the combined flavours of these bodies. Citral may be obtained from other sources than lemon peel; e. g., from lemon grass, (*Audropogon Schoenanthus*). A solution of citral in dilute alcohol possesses a flavour closely resembling that of extract of lemon, but is not to be identified with this latter. There can be no doubt that much of the extract of lemon, sold in America is nothing else than a solution of citral in dilute alcohol; often coloured by turmeric or by coal tar yellows, in order to give it the appearance of a genuine lemon product. The chief inducement to the manufacturer is his ability to use weak alcohol, instead of 90 per cent alcohol which is necessary to dissolve true oil of lemon. In this connection I may quote the following from the report of the Connecticut Laboratory for 1901.

'The materials for a quart of good extract cost about 75 cents; 60 cents for the alcohol, and 15 cents for the oil and peel, or about 2½ cents per ounce. Since an ounce bottle of lemon extract usually sells at retail for ten cents, there is a margin of about 7½ cents to cover cost of manufacture, cost of package and labels, and profits, even when the best materials are used.'

This applies, of course, to the United States, but may be considered as not far out of the way for Canada. If this view is tenable, there should be sufficient margin of profit to furnish no excuse for substitution of cheaper ingredients in manufacture. It will be seen by reference to the accompanying tables, that the usual retail price is 10 cents per ounce.

The alcoholic strength of the samples as sold is given in the following table:—

Above 90 per cent alcohol .....	2 samples.
From 80 to 90 per cent alcohol .....	11 "
" 70 to 80 " " .....	13 "
" 60 to 70 " " .....	9 "
" 50 to 60 " " .....	6 "
" 40 to 50 " " .....	16 "
" 30 to 40 " " .....	15 "
" 20 to 30 " " .....	35 "
Below 20 " " .....	3 "
Total .....	110 "

It is thus seen that 63 per cent of these samples contain alcohol of less than 50 per cent strength. It is quite certain that such samples contain only traces of lemon oil.

Inquiry among reputable druggists discovers the fact that the tincture of lemon of the British Pharmacopœia is practically unknown to Canadian trade. An essence of lemon, made from lemon oil instead of lemon peel, and approximately conforming to the United States Pharmacopœia, takes its place. This is probably due to the greater convenience of using oil of lemon, and to the fact that a product of definite and constant strength is more easily prepared in this way. I do not know that any complaint against such a substitution could be sustained, except upon purely technical grounds.

In Table A I have arranged all the samples containing one per cent or more of lemon oil, together with the alcoholic strength of these samples. They are arranged in the order of lemon oil content, and it will be noted that, speaking generally, the alcoholic strength is higher, with a higher percentage of oil. The following table gives a conspectus of the results of this examination, so far as lemon oil is concerned:—

Above 6 per cent of lemon oil .....	2 samples.
From 5 to 6 " " .....	3 "
" 4 to 5 " " .....	3 "
" 3 to 4 " " .....	5 "
" 2 to 3 " " .....	4 "
" 1 to 2 " " .....	15 "
Below 1 " " .....	78 "
Total .....	110 "

Owing to the non-existence of a standard for extract of lemon, either as regards its alcoholic strength or its content in lemon oil, it is impossible to declare any of these samples adulterated, by reference to a standard extract.

TABLE A.—SAMPLES containing one per cent or more of Lemon Oil with their alcohol content.

Serial.	Number of Sample.	Percentage of Lemon Oil.	Percentage of Alcohol.	Remarks.
1.	24075	6.2	83.20	Highest lemon oil.
2.	28202	6.0	87.96	
3.	24057	5.9	88.72	
4.	27072	5.6	88.36	
5.	24761	5.0	80.96	
6.	24054	4.7	88.72	
7.	24106	4.0	90.92	
8.	28069	4.0	79.84	
9.	27062	3.7	89.44	
10.	24767	3.7	87.96	
11.	28522	3.6	81.72	
12.	24498	3.4	92.04	
13.	25561	3.0	75.12	
14.	23405	2.9	80.96	
15.	29002	2.7	75.92	
16.	28207	2.6	82.44	
17.	24766	2.0	76.72	
18.	24760	1.8	73.44	
19.	28516	1.8	79.84	
20.	25572	1.6	71.68	
21.	28215	1.5	67.66	
22.	29016	1.5	75.92	
23.	26811	1.5	73.44	
24.	25559	1.5	73.44	
25.	24765	1.4	75.52	
26.	25562	1.4	73.44	
27.	29023	1.3	74.72	
28.	24104	1.2	61.96	
29.	28514	1.2	66.80	
30.	26980	1.2	61.20	
31.	27075	1.0	60.84	Lowest alcohol
32.	25570	1.0	69.04	

In all the samples now reported, a careful examination has been made (by the refractometric method) for the presence of methyl alcohol. No methyl alcohol has been found in any sample.

The work herein recorded has been done by A. Valin.

I have the honour to be, sir,

Your obedient servant,

A. MCGILL.

## EXAMINATION OF

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1905.			<i>District of Nova Scotia—R. J. Waugh, Inspector.</i>			Cts.
Aug. 15	Lemon Flavouring Extract.	27062	A. V. Rand, Wolfville, N.S.	6 ozs.	60	A. V. Rand, Wolfville, N.S.
" 15	"	27065	W. T. Stephens "	3 bots.	30	Simpson Bros., Halifax.
" 15	"	27066	Dodge & Co., Windsor, N.S.	3 "	75	McLaren, Toronto, Ont.
" 16	"	27067	Wentworth Stores, Windsor, N.S.	3 "	60	Pure Gold Co., Toronto, Ont.
" 16	Extract Lemon.....	27070	W. H. Worth, Windsor, N.S.	3 "	30	Greig Mfg. Co., Montreal
" 16	"	27071	J. Lynch & Son "	3 "	75	Brown & Webb, Halifax.
" 16	"	27072	R. B. Dokin "	3 "	60	R. B. Dokin, Windsor, N.S.
" 17	"	27080	E. Fahie, Halifax.	3 "	30	Greig Mfg. Co., Montreal
" 17	"	27082	A. Hublely "	3 "	30	Brown & Webb, Halifax.
" 17	"	27085	J. A. Leaman & Co., Halifax	3 "	30	Not known.....
			<i>District of New Brunswick—J. C. Ferguson, Inspector.</i>			
" 15	Lemon Flavouring Extract.	24054	The Canadian Drug Co., Ltd., 27-29 Mills, St. John, N.B.	3 bots.	50	The Canadian Drug Co., Ltd., St. John, N.B.
" 15	"	24057	C. S. Philips, cor. Douglas Ave. and Main St., St. John, N.B.	3 "	45	Davis, Lawrence & Co., Ltd., Montreal.
" 16	"	24058	Robert McAfee, 7 Waterloo St., St. John, N.B.	3 "	60	Pure Gold Mfg. Co., Toronto.
" 16	"	24061	F. E. Williams Co., Ltd., cor. Princess and Charlotte Sts., St. John, N.B.	3 "	90	McLaren's, Hamilton, Ont.
" 17	"	24063	Charles A. Clark, 49 Charlotte St., St. John, N.B.	3 "	30	I. E. Co., Toronto, Ont.
" 17	"	24065	D. J. Purdy, 325 Main St., St. John, N.B.	3 "	60	The Robert Greig Co., Ltd., Toronto.
" 22	"	24075	Sussex Mercantile Co., Sussex, King's Co., N.B.	3 "	60	Sussex Mercantile Co., Sussex, King's Co., N.B.
Sept. 1	"	24104	Harry G. McBeath, 239 Charlotte St., St. John, N.B.	3 "	60	Seely Mfg. Co., Windsor, Ont.
" 1	"	24106	S. H. Sherwood, 123 Queen St., St. John, N.B.	3 "	30	F. F. Dalley Co., Hamilton.
" 2	"	24106	T. B. Barker & Sons, 57-59 Dock St., St. John, N.B.	3 "	45	T. B. Barker & Sons, 57-59 Dock St., St. John, N.B.
			<i>District of P. E. Island—T. Moore, Inspector.</i>			
Aug. 12	Essence Lemon.....	24497	A. Gates & Co., Charlottetown	6 ozs.	48	Pure Gold Mfg. Co., Toronto.
" 12	"	24498	J. G. Jamieson "	6 "	48	J. S. Jamieson, Charlottetown.
" 12	"	28202	A. W. Reddin "	6 "	60	A. W. Reddin, Charlottetown.
" 15	"	28207	O. S. Gordon "	6 "	54	Dearborne & Co., St. John.

## LEMON EXTRACT.

## RESULTS OF ANALYSIS.

Inspector's Report.	Specific Gravity of the Sample.					Approximate Alcohol.		Rotation in 2-dm. Tube.		Equivalent Lemon Oil.—Volume.	Specific Gravity of Oil—Free Extract—Diluted.		Alcohol Calculated—Volume.		Refractometer Work.			
	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
.....	0.8228	90.18	93.41	+12.0	3.7	0.9738	89.44	46.5	17.98	18.23	None.							
.....	0.9677	54.62	62.45	+3.2	1.0	0.9811	69.84	37.0	13.10	12.69	"							
.....	0.9399	39.85	47.18	+0.8	0.2	0.9848	47.16	30.0	9.20	9.50	"							
.....	0.9468	39.40	45.70	+0.3	0.1	0.9852	43.76	31.0	9.76	9.21	"							
.....	0.9691	22.00	25.86	+0.8	0.2	0.9907	27.12	24.5	6.22	5.44	"							
.....	0.8978	59.04	66.78	+0.4	0.1	0.9795	66.80	38.0	13.64	13.54	"							
.....	0.8292	88.64	92.39	+11.8	5.6	0.9741	88.36	47.0	18.23	18.09	"							
.....	0.9742	17.92	21.99	+0.3	0.1	0.9923	22.20	22.0	4.82	4.54	"							
.....	0.8929	61.13	68.76	+2.0	0.6	0.9790	68.68	39.0	14.19	13.92	"							
.....	0.9773	13.42	18.98	+0.4	0.1	0.9935	18.52	21.0	4.19	3.71	"							
Sceptre Brand.....	0.8371	88.36	92.03	+15.2	4.7	0.9740	88.72	48.5	18.98	18.08	None.							
.....	0.8315	86.62	90.73	+19.0	5.9	0.9740	88.72	47.0	18.23	18.08	"							
.....	0.9419	38.83	46.08	+0.6	0.2	0.9830	46.44	30.0	9.20	9.36	"							
.....	0.9490	35.00	41.81	+0.6	0.2	0.9890	42.92	29.2	8.77	8.64	"							
.....	0.9559	24.46	29.76	+0.2	0.1	0.9896	29.84	24.3	6.10	6.14	"							
.....	0.9465	36.28	43.25	+0.4	0.1	0.9855	44.68	29.5	8.91	9.06	"							
.....	0.8450	81.36	89.61	+20.0	6.2	0.9754	83.20	45.0	17.25	16.92	"							
.....	0.9636	56.50	64.31	+4.0	1.2	0.9808	61.96	38.0	13.64	12.54	"							
.....	0.9671	23.54	28.68	+0.1	0.0	0.9900	29.28	24.5	6.22	5.67	"							
.....	0.8231	89.88	93.20	+13.0	4.0	0.9734	90.92	49.0	19.29	18.54	"							
.....	0.9426	38.44	45.65	+0.5	0.1	0.9833	45.40	29.8	9.09	9.14	None.							
.....	0.8227	88.88	92.45	+11.0	3.4	0.9731	92.04	48.4	18.93	18.77	"							
.....	0.8316	86.58	90.70	+19.5	6.0	0.9742	87.96	46.0	17.73	17.92	"							
.....	0.8578	76.13	82.26	+8.5	2.6	0.9756	82.44	45.0	17.23	16.77	"							



## EXAMINATION OF

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1905.			<i>District of P. E. Is'and—T. Moore, Inspector—Con.</i>			Cts.
Aug. 16	Essence Lemon.....	28214	W. W. Jenkins, Georgetown	6 ozs.	50	Tropical Extract Co., Toronto.
" 16	" " " " " " " "	28215	A. McLaren & Co. " " "	6 "	50	The Baird Co., Ltd., Woodstock, N.B.
" 16	" " " " " " " "	28219	W. A. Pool, Lower Montague	6 "	45	Tropical Extract Co., Toronto.
" 16	" " " " " " " "	28221	H. F. Feehan, Mount Stewart	3 bots.	24	Standard Extract Co., St. John, N.B.
" 16	" " " " " " " "	28225	D. McKenzie, Kensington	6 ozs.	30	" " " " " "
" 18	" " " " " " " "	28230	Jardine & Co., Summerside	6 "	54	Chaput fils & Co., Montreal.
			<i>District of Quebec—C. E. Roy, Inspector.</i>			
Sept. 11	Extract Lemon.....	29002	Langlois & Paradis, 8 St. Peter St.	1 doz.	75	Henri Jonas & Co., Montreal.
" 11	" " " " " " " "	29003	Ed. Morin & Co., Mountain Hill.	1 "	39	Ed. Morin & Co., Quebec
" 13	" " " " " " " "	29013	A. B. Dupuis, 190 St. Paul	1 "	90	Imperial Extract Co., Toronto.
" 13	" " " " " " " "	29014	H. Blouin, 153 " " "	1 "	90	R. Herron & Co., Montreal.
" 14	" " " " " " " "	29016	P. L. Turgeon, Marche Finlay	1 "	45	Henri Jonas & Co., Montreal.
" 14	" " " " " " " "	29017	Jos. Amyot, 45 Dalhousie	1 "	85	Hy. Skinner, Kingston.
" 14	" " " " " " " "	29018	Drouin et freres, 37 St. Andre	1 "	90	Ed. Morin & Co., Quebec.
" 18	" " " " " " " "	29023	A. Joseph & Son, Quebec	1 "	90	Henri Jonas & Co., Montreal.
" 18	" " " " " " " "	29025	Leclerc & Letellier, Quebec	1 "	1.25	F. Dalley, Hamilton.
" 19	" " " " " " " "	29026	A. Carrier et fils, Levis	1 "	20	Henri Jonas & Co., Montreal.
			<i>District of St. Hyacinthe—J. C. Rouleau, Inspector.</i>			
Aug. 21	Lemon Extract ....	24758	A. E. Dartois & fils, Farnham.	3 bots.	30	Hudon & Orsali, Montreal.
" 22	Lemon Extract, H. J. & Co.	24759	C. T. Gervais, St. Constant	3 "	45	Not known.....
" 23	Lemon Extract....	24760	A. B. Prieur, Coteau Landing.	3 "	30	H. Jonas & Co., Montreal.
" 23	" " Royal	24761	W. Brown & Sons, Pt. Fortune.	3 "	75	Davis, Lawrence & Co., Montreal.
" 24	" " " " " " " "	24762	J. D. Campbell, Laehute	3 "	75	Hudon, Hebert & Cie, Montreal.
" 29	Extract Citron 'Princes'	24763	Damase Giroux, St. Jerome Co., Terrebonne.	3 "	30	Laporte, Martin & Cie, Montreal.
" 30	Extract Citron.....	24764	G. Champoux, Joliette	3 "	30	Lyon, Silverman & Co., Montreal.
" 30	" " " " " " " "	34765	Pierre Poirier, St. Gabriel de B.	3 "	30	H. Jonas & Co., Montreal.
Sept. 1	" " " " " " " "	24766	Julien Courteau, Nicolet	3 "	30	" " " " " "
" 6	" " " " " " " "	24767	Pharmacie St. Hyacinthe, St. Hyacinthe	3 "	60	Vendor.....

## LEMON EXTRACT—Continued.

Inspector's Report.	RESULTS OF ANALYSIS.											
	Specific Gravity of the Sample.	Approximate Alcohol.		Rotation in 2 dm. Tube.	Equivalent Lemon Oil.—Volume.	Specific Gravity of Oil.—Free Extract—Diluted.	Alcohol Calculated—Volume.	Refractometer Work.				
		Weight.	Volume.					Scale Reading.	Alcohol Equivalent.	Alcohol Present.	Methyl Alcohol.	
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	
.....	0.9518	33.76	40.47	+ 0.5	0.1	0.9866	40.84	28.0	8.09	8.21	None.	
.....	0.8920	61.50	69.11	+ 4.9	1.5	0.9793	67.66	40.0	14.73	13.69	"	
.....	0.9708	20.68	25.27	+ 0.3	0.1	0.9912	25.60	22.0	4.82	5.12	"	
.....	0.9536	32.50	39.04	+ 0.5	0.1	0.9870	39.44	27.9	8.04	7.83	"	
.....	0.9728	19.00	23.28	+ 0.3	0.1	0.9919	23.44	23.0	5.39	5.86	"	
.....	0.9720	20.50	25.07	+ 0.2	0.1	0.9913	25.18	22.5	5.06	5.06	"	
.....	0.8748	68.88	75.90	+ 8.8	2.7	0.9773	75.92	41.8	15.63	15.42	None.	
.....	0.9351	42.24	49.76	+ 0.5	0.2	0.9837	51.08	29.0	8.64	10.31	"	
.....	0.9728	19.00	23.28	+ 0.4	0.1	0.9916	24.40	22.0	4.82	4.87	"	
.....	0.9728	19.00	23.28	+ 0.3	0.1	0.9919	23.44	22.0	4.82	4.69	"	
.....	0.8742	69.13	76.13	+ 4.5	1.5	0.9773	75.92	41.0	15.23	15.42	"	
.....	0.9692	21.92	26.77	+ 0.2	0.0	0.9908	26.84	23.0	5.39	5.37	"	
.....	0.9675	23.23	28.31	+ 0.4	0.1	0.9903	28.36	24.0	5.94	5.69	"	
.....	0.8750	68.79	75.83	+ 4.2	1.3	0.9776	74.72	41.2	15.33	15.17	"	
.....	0.9675	23.23	28.31	+ 0.5	0.1	0.9904	28.04	24.0	5.94	5.62	"	
.....	0.9714	20.17	24.68	+ 0.3	0.1	0.9915	24.68	22.5	5.06	4.94	"	
.....	0.9713	20.25	24.78	+ 0.3	0.1	0.9915	24.68	22.1	4.87	4.94	None.	
Anchor Brand.....	0.9702	21.15	25.86	+ 0.5	0.1	0.9912	25.60	23.5	5.66	5.21	"	
.....	0.8737	69.33	76.31	+ 6.0	1.8	0.9779	73.44	41.0	15.23	14.91	"	
.....	0.8471	80.50	85.90	+16.0	5.0	0.9760	80.96	43.5	16.48	16.46	"	
.....	0.9731	18.77	23.01	+ 0.2	0.1	0.9920	23.12	22.0	4.82	4.62	"	
.....	0.9729	18.92	23.19	+ 0.4	0.1	0.9919	23.44	22.1	4.87	4.69	"	
.....	0.9720	20.50	25.07	+ 0.4	0.1	0.9911	25.92	22.8	5.28	5.19	"	
.....	0.8728	69.71	76.65	+ 4.5	1.4	0.9774	75.02	41.0	15.23	15.33	"	
.....	0.8718	70.12	77.01	+ 6.5	2.0	0.9771	76.72	42.5	15.96	15.58	"	
.....	0.8275	88.18	91.90	+12.0	3.7	0.9742	87.96	46.5	17.98	17.92	"	

Extract bought from Kerry, Watson & Co., Montreal, afterwards diluted by vendor.

## EXAMINATION OF

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1905.			<i>District of Montreal—J. J. Costigan, Inspector.</i>		Cts.	
Aug. 24	Lemon Extract.....	26811	Henri Jonas & Co., 391 St. Paul St. Montreal.	8 ozs.	75	Vendor .....
" 24	" .....	26812	Lyon Silverman, 390 St. Paul St., Montreal.	8 "	50	" .....
" 24	" .....	26813	P. Laurandean, 139 St. Paul St., Montreal.	1 bot.	25	Not known.....
" 28	" .....	26814	S. Chamberland, 3St. Antoine St., Montreal.	3 bots.	45	Imperial Extract Co., Toronto.
" 28	" .....	26815	" .....	1 bot.	60	The Greig Mfg. Co., Montreal.
" 31	" .....	26816	Co-operative Grocery Co., 293 St. Antoine St., Montreal.	3 bots.	30	Not known.....
" 31	" .....	26817	" .....	1 bot.	25	" .....
" 31	" .....	26818	Murphy Bros., 2907 St. Catherine, Montreal.	3 bots.	30	" .....
Sept. 1	" .....	26819	Z. Trudreau, 3571 Notre Dame St. Henri.	3 "	25	Marotte & Leblanc, Montreal.
" 1	" .....	26820	P. Lebrun, 3531 Notre Dame St. Henri.	3 "	30	Henri Jonas & Co., Montreal.
			<i>District of Kingston—J. Hogan and A. E. Sanderson, Inspectors.</i>			
Aug. 16	Lemon Flavouring Extract.	28405	C. B. McLean, Bank St., Ottawa.	6 ozs.	30	Imperial Extract Co., Toronto.
" 16	" .....	28406	P. D. Herbert, Bank St., Ottawa.	8 "	50	Pure Gold Mfg. Co., Toronto.
" 21	" .....	28509	W. W. Gibson, King St., Kingston.	6 "	25	Not known.....
" 21	" .....	28511	A. Hoag, Princess St., Kingston.	6 "	40	A. Hoag, Princess St., Kingston.
" 21	" .....	28513	W. H. Medley, Princess St., Kingston.	6 "	40	W. H. Medley, Princess St., Kingston.
" 21	" .....	28514	James McLeod, Princess St., Kingston.	6 "	30	James McLeod, Princess St., Kingston.
" 22	" .....	28516	H. Wade, King St., Kingston.	6 "	30	H. Wade, King St., Kingston.
" 22	" .....	28518	H. Skinner, Princess St., Kingston.	6 "	30	H. Skinner, Princess St., Kingston.
" 22	" .....	28520	A. Chown, Princess St., Kingston.	6 "	50	A. Chown, Princess St., Kingston.
" 22	" .....	28522	G. W. Mahood, Princess St., Kingston.	6 "	30	G. W. Mahood, Princess St., Kingston.
			<i>District of Toronto—A. E. Sanderson, Inspector.</i>			
Aug. 25	Lemon Flavouring Extract.	28412	J. Blood, 419 Yonge St., Toronto.	6 ozs.	20	Tothunter & Mitchell, Toronto.
" 25	" .....	28415	J. F. Moorish, 237 Yonge St., Toronto.	6 "	30	Pure Gold Mfg. Co., Toronto.
" 25	" .....	28418	McAuliffe Bros., 140 York St., Toronto.	6 "	30	A. M. Piper Co., Toronto.

## LEMON EXTRACT—Continued.

## RESULTS OF ANALYSIS.

Inspector's Report.	Specific Gravity of the Sample.			Approximate Alcohol.		Rotation in 2-dm. Tube.	Equivalent Lemon Oil—Volume.	Specific Gravity of Oil—Free Extract—Diluted.		Alcohol Calculated—Volume.		Refractometer Work.				
	p. c.	p. c.	p. c.	Weight.	Volume.			p. c.	p. c.	p. c.	p. c.	Scale Reading.	Alcohol Equivalent.	Alcohol Present.	Methyl Alcohol.	
.....	0.8778	67.63	74.78	+ 4.8			1.5	0.9779	73.44			p. c.	p. c.	p. c.	p. c.	
.....	0.8520	33.47	40.14	+ 0.6			0.2	0.9865	41.30			p. c.	p. c.	p. c.	p. c.	
.....	0.9650	24.46	29.76	+ 1.5			0.4	0.9885	30.96			p. c.	p. c.	p. c.	p. c.	
This article put up in small tany bottles of about 6 ozs.	0.9637	24.62	29.85	+ 0.0			0.0	0.9897	30.28			p. c.	p. c.	p. c.	p. c.	
.....	0.9443	37.30	44.40	+ 0.5			0.2	0.9835	44.68			p. c.	p. c.	p. c.	p. c.	
.....	0.9707	20.76	25.37	+ 0.3			0.1	0.9908	26.84			p. c.	p. c.	p. c.	p. c.	
Universal Brand.....	0.9195	49.30	57.20	+ 1.0			0.3	0.9877	68.60			p. c.	p. c.	p. c.	p. c.	
Standard Brand.....	0.9734	18.54	22.73	+ 0.4			0.1	0.9921	22.84			p. c.	p. c.	p. c.	p. c.	
Sun Brand.....	0.9839	10.15	12.58	+ 0.0			0.0	0.9955	12.84			p. c.	p. c.	p. c.	p. c.	
.....	0.9735	18.46	22.64	+ 0.7			0.2	0.9909	26.52			p. c.	p. c.	p. c.	p. c.	
Sold as pure.....	0.9688	22.25	27.13	+ 0.3			0.1	0.9906	27.44			p. c.	p. c.	p. c.	p. c.	
Guaranteed pure.....	0.9348	42.38	49.91	+ 0.5			0.2	0.9839	50.32			p. c.	p. c.	p. c.	p. c.	
.....	0.8578	76.13	82.26	+ 13.0			4.0	0.9763	79.84			p. c.	p. c.	p. c.	p. c.	
.....	0.9267	46.14	53.86	+ 0.6			0.2	0.9829	51.08			p. c.	p. c.	p. c.	p. c.	
.....	0.8916	61.54	69.13	+ 2.9			0.5	0.9793	68.68			p. c.	p. c.	p. c.	p. c.	
.....	0.8945	60.45	68.13	+ 4.0			1.2	0.9795	66.80			p. c.	p. c.	p. c.	p. c.	
.....	0.8560	76.88	82.90	+ 6.0			1.8	0.9763	79.84			p. c.	p. c.	p. c.	p. c.	
.....	0.9711	30.42	34.86	+ 0.2			0.1	0.9913	25.18			p. c.	p. c.	p. c.	p. c.	
.....	0.9688	29.35	35.43	+ 0.5			0.2	0.9876	36.84			p. c.	p. c.	p. c.	p. c.	
.....	0.8498	79.40	85.00	+ 11.5			3.6	0.9758	81.72			p. c.	p. c.	p. c.	p. c.	
.....	0.9622	27.07	32.81	+ 0.1			0.0	0.9887	33.80			p. c.	p. c.	p. c.	p. c.	
.....	0.9665	24.15	29.40	+ 1.0			0.3	0.9868	29.52			p. c.	p. c.	p. c.	p. c.	
.....	0.9650	25.14	30.57	+ 0.4			0.1	0.9895	30.96			p. c.	p. c.	p. c.	p. c.	

## EXAMINATION OF

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1905.			<i>District of Toronto—A. E. Sanderson, Inspector—Con.</i>		Cts.	
Aug. 25	Lemon Flavouring Extract.	28421	O. Cooper, 1699 Yonge St., North Toronto.	6 ozs.	30	Davidson & Hay, Ltd., Toronto.
" 26	"	28425	G. Gates, Oakville.....	6 "	30	R. B. Hayhoe & Co., Toronto.
" 26	"	28428	Thos. Harker, Oakville....	6 "	25	Vendor.....
" 28	"	28437	W. H. Ryckman, 16 McNab St., Hamilton.	6 "	40	F. F. Dalley Co., Hamilton.
" 28	"	28438	" " "	6 "	30	Vendor.....
" 28	"	28442	W. Carroll, 80 James St., Hamilton.	6 "	30	Imperial Extract Co., Toronto.
" 28	"	28445	P. & R. Lang, Dundas, Ont.	6 "	30	Todhunter, Mitchell & Co., Toronto.
			<i>District of London—T. Kidd, Inspector.</i>			
Aug. 12	Lemon Extract.....	22373	Charles Andrews, Seaforth..	3 bots.	30	Canada Spice and Grocery Co., London, Ont.
" 14	"	22379	S. A. Tood, Harrison.....	3 "	25	John Sloan & Co., Toronto.
" 14	"	22376	R. A. Hutchinson, Wingham	3 "	30	Gorman & Eckart, London.
" 15	"	22384	Appel & Fisher, Walkerton..	3 "	25	" " "
" 16	"	22389	E. J. Godfrey, Meaford.....	3 "	30	Robert Greig & Co., Toronto.
" 22	"	22398	W. T. O'Neill, Clinton.....	3 "	75	Lind & Kerrigan, London.
" 22	"	22399	R. Graham, " "	3 "	30	" " "
" 17	"	22394	Darrough Bros, Collingwood.	3 "	30	Hamilton Coffee & Spice Co., Hamilton.
" 23	"	22405	J. W. Ortwien, Hensal.....	3 "	30	F. F. Dalley, Hamilton..
" 24	"	22416	Ryan & Russell, London.....	3 "	30	London Grocery & Spice Co., London, Ont.
			<i>District of Manitoba—W. M. Conklin, Inspector.</i>			
Sept. 11	Lemon Extract.....	25570	White Star Mfg Co., Winnipeg.	3 bots.	50	White Star M'fing Co., Winnipeg.
" 11	"	25571	The Dyson Co., Winnipeg....	3 "	45	The Dyson Co., Winnipeg
" 11	"	25572	Martin, Bole, Wynne Co., Winnipeg.	3 "	40	Martin, Bole, Wynne Co., Winnipeg.
" 11	"	25573	Codville & Co., Winnipeg....	3 "	45	Codville & Co., Winnipeg.
" 23	"	25556	Tritt & Shrage, Neepawa....	3 "	60	" " "
" 23	"	25559	Wright & Co., Minnedosa....	3 "	75	Bole Drug Co., " "
" 24	"	25561	Chapman & Co., Strathclair.	3 "	75	Campbell Bros & Wilson, Winnipeg.
" 24	"	25562	W. H. Speer, Shoal Lake....	3 "	75	Martin, Bole, Wynne Co., Winnipeg.
" 26	"	25565	S. Schooler, Gladstone.....	3 "	75	Blue Ribbon M'fing Co., Winnipeg.
" 26	"	25569	J. O'Rielly, Portage la Prairie	3 "	75	McLaren's, Hamilton....
			<i>District of Calgary—W. Fletcher, Inspector.</i>			

There were no collection made in this district.

## LEMON EXTRACT—Continued.

## RESULTS OF ANALYSIS.

Inspector's Report.	Specific Gravity of the Sample.		Approximate Alcohol.		Rotation in 2-dm. Tube.	Equivalent Lemon Oil—Volume.	Specific Gravity of Oil—Free Extract—Diluted.	Alcohol Calculated—Volume.		Refractometer Work.			
	p. c.	p. c.	p. c.	p. c.				p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
					Weight.	Volume.	Scale Reading.						
.....	0.9555	24.69	30.04	+ 0.5	0.2	0.9896	30.64	24.5	6.22	6.14	None.		
.....	0.9700	21.31	26.04	+ 0.3	0.1	0.9608	26.84	24.0	5.94	5.37	"		
.....	0.9650	25.14	30.57	+ 0.6	0.2	0.9895	30.96	25.0	6.50	6.21	"		
.....	0.9653	30.83	37.14	+ 0.4	0.1	0.9674	38.16	27.0	7.58	7.08	"		
.....	0.9680	22.85	27.86	+ 0.5	0.2	0.9904	28.04	22.9	5.33	5.62	"		
.....	0.9690	22.68	25.95	+ 0.6	0.2	0.9907	27.12	23.5	5.66	5.44	"		
.....	0.9631	22.77	27.77	+ 0.2	0.1	0.9904	28.04	24.0	5.94	5.62	"		
.....	0.9708	20.68	25.57	+ 0.5	0.1	0.9609	26.52	23.8	5.83	5.31	None.		
.....	0.9678	23.00	28.04	+ 0.5	0.2	0.9603	28.36	24.0	5.94	5.69	"		
.....	0.9545	31.94	38.46	+ 0.5	0.2	0.9673	38.48	27.5	7.83	7.73	"		
.....	0.9653	30.83	37.14	+ 0.5	0.2	0.9876	37.48	27.0	7.58	7.53	"		
.....	0.9762	16.31	20.06	+ 0.7	0.2	0.9928	20.64	22.0	4.82	4.12	"		
Sheriff's Extract.	0.9420	38.61	45.83	+ 0.5	0.2	0.9851	46.08	31.6	9.54	9.29	"		
.....	0.9709	20.58	25.17	+ 0.4	0.1	0.9911	25.92	23.2	5.49	5.19	"		
.....	0.9682	22.69	27.68	+ 0.5	0.2	0.9905	27.76	23.8	5.83	5.56	"		
.....	0.8562	76.70	82.12	+ 9.5	2.9	0.9769	80.96	45.0	17.23	1.46	"		
.....	0.9740	18.68	22.18	+ 0.2	0.1	0.9920	23.42	22.2	4.93	4.62	"		
.....	0.8927	61.21	68.83	+ 3.4	1.0	0.9789	69.04	45.0	17.23	14.00	None.		
.....	0.9440	37.67	44.70	+ 0.5	0.2	0.9848	47.16	30.8	9.65	9.50	"		
.....	0.8823	65.71	73.03	+ 5.4	1.6	0.9782	71.68	39.0	14.19	14.56	"		
.....	0.9392	39.73	35.80	+ 0.2	0.1	0.9878	36.84	27.0	7.58	7.47	"		
.....	0.9645	25.50	30.98	+ 0.6	0.2	0.9805	30.96	24.0	5.94	6.91	"		
.....	0.8795	66.91	74.13	+ 5.0	1.5	0.9779	73.44	41.5	15.46	14.91	"		
.....	0.8708	70.52	77.36	+ 9.6	3.0	0.9775	75.12	40.0	14.73	15.25	"		
.....	0.8788	67.21	74.40	+ 4.5	1.4	0.9779	73.44	40.0	14.73	14.91	"		
.....	0.9209	46.95	53.77	+ 0.9	0.3	0.9829	54.08	32.3	10.49	10.92	"		
.....	0.9425	38.50	45.71	+ 0.8	0.3	0.9832	45.76	29.5	8.92	9.91	"		

## EXAMINATION OF

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher.
				Quantity.	Value.	
1905.			<i>District of British Columbia-- J. E. Millar, Inspector.</i>			Cts.
Aug. 15	Lemon Extract.....	26384	H. Albert, Vancouver .....	3	lots.	60 B. C. Canning Co., Vancouver.
" 16	" .....	26390	Watson and Hall, Victoria..	3	"	60 The Pioneer Coffee and Spice Co., Victoria.
" 15	" .....	26373	J. F. May, Vancouver.....	3	"	75 Shiriff's, Toronto.....
" 15	" .....	26374	C. E. Turner " ....	3	"	75 The Pure Gold Mfg Co., Toronto.
" 15	" .....	26375	The London Grocery Co., Vancouver.	3	"	75 Robinson M'Fing. Co., Toronto.
" 15	" .....	26376	The Hudson Bay Co., Vancouver.	3	"	60 The Hudson Bay Co., Winnipeg.
" 15	" .....	26380	H. A. Edgett & Co., Vancouver.	3	"	75 Seely Mfg. Co., Detroit & Windsor.
" 16	" .....	26369	J. Moffat, Victoria.....	3	"	60 Imperial Extract Co., Toronto.
" 16	" .....	28004	West End Grocery, New Westminster.	3	"	60 Hamilton Coffee & Spice Co., Hamilton, Ont.
" 16	" .....	28006	T. S. Annandale, New Westminster.	3	"	45 B. C. Canning Co., Vancouver.

Samples made in the laboratory from whole lemon peel—not the outer pericarp only.....  
 " " " " in strict accordance with B. P. directions.....

Determinations of lemon oil in solution were made daily during the period of seven (7) days; and further increase obtained during the seven-day period.

LEMON EXTRACT—*Concluded.*

Inspector's Report.	RESULTS OF ANALYSIS.												
	Specific Gravity of the Sample.						Specific Gravity of Oil—Free Extract—Diluted.						Refractometer Work.
	Approximate Alcohol		Rotation in 2-dm. Tube.		Alcohol Calculated—Volume.		Scale Reading.		Alcohol Equivalent.		Alcohol Present.		Methyl Alcohol.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.
.....	0.9434	37.00	45.16	+ 0.4	0.1	0.9853	43.40	30.2	9.30	9.14	None.	.....	.....
.....	0.9384	29.60	35.74	+ 0.3	0.1	0.9881	35.84	27.0	7.58	7.50	.....	.....	.....
.....	0.9384	40.60	47.50	+ 0.4	0.1	0.9844	43.32	31.0	9.76	9.79	.....	.....	.....
.....	0.9364	41.60	49.07	+ 0.2	0.1	0.9841	49.05	31.0	9.76	10.00	.....	.....	.....
.....	0.9720	19.67	24.04	+ 0.3	0.1	0.9916	24.40	22.4	5.04	4.87	.....	.....	.....
.....	0.9257	47.50	55.27	+ 1.0	0.3	0.9826	55.24	34.0	11.43	11.15	.....	.....	.....
.....	0.8088	58.50	66.34	+ 3.8	1.2	0.9816	61.20	40.7	14.08	13.38	.....	.....	.....
.....	0.9015	27.57	33.30	+ 0.3	0.1	0.9887	33.80	26.0	7.06	7.78	.....	.....	.....
.....	0.9403	39.65	46.97	+ 0.3	0.1	0.9852	45.76	30.5	9.48	9.21	.....	.....	.....
.....	0.9830	10.15	12.58	+ 0.2	0.1	0.9655	12.88	19.0	2.93	2.56	.....	.....	.....
.....	0.8744	69.04	76.65	+ 1.7	0.5	0.9777	74.32	43.8	16.43	15.08	.....	.....	.....
.....	0.8735	68.67	75.72	+ 4.4	1.4	0.9779	73.44	44.5	16.98	14.91	.....	.....	.....

results obtained as follows:—1st day = 1.0%, 2nd day = 1.2%, 3rd day = 1.2%, 4th day = 1.4%. No