



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. 198  
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Lemon Flavouring Extract

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*CORRECTION.*

In Bulletin 184, p. 6, a sample of Ginger (No. 31480), sold by W. S. Brown, Charlottetown, P. E. I., and found to be adulterated, was stated by the vendor to have been furnished him by W. H. Schwartz & Sons, Halifax. The following statement, by the vendor, is now published, in justice to the firm named :—

CHARLOTTETOWN, P. E. I.,

11 November, 1909.

MESSRS. W. H. SCHWARTZ & SONS,

Halifax, N. S.

DEAR SIRS :—This is to certify that after thoroughly considering the matter as to whose Ginger I gave to Mr. Theo. Moore, the Inspector in Charlottetown, I am unable to prove that it was yours, having bought ginger from a wholesaler in Charlottetown on the 20th March, 1909.

Yours truly,

(Signed,) WALTER S. BROWN.

LABORATORY  
OF THE  
INLAND REVENUE DEPARTMENT  
OTTAWA, CANADA

BULLETIN No. 198

Lemon Flavouring Extract.

OTTAWA, February 28, 1910.

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

SIR,—I have the honour to present herewith a report upon seventy-five (75) samples, purchased throughout Canada in December last, as Lemon Flavouring Extract.

The last examination of this article was made in 1905, and is reported in Bulletin No. 114.

Lemon Extract is probably more largely used in the household than any other kindred preparation for the flavouring of pastry, &c. It is, of course, valued proportionately to its strength as a flavouring material, and to the quality of the flavour which gives it its name. No legalized standard for Lemon Extract exists in Canada; and in view of the large consumption of the article, it is of importance that it should be defined and legally recognized.

The results now placed in your hands, together with those published in Bulletin No. 114, will suffice to show the character of Lemon Extract as sold in Canada.

Both the British and the United States Pharmacopoeias define a Tincture (or Spirit) of Lemon, and prescribe methods of preparation. Although it is not permissible to identify the Commercial Extract, as sold for flavouring purposes, with the pharmacopoeal tinctures still, as these last are "chiefly used to impart flavour to other medicines" (Squire's Companion, 18th Ed'n, p. 222), it seems reasonable to infer that the same methods of manufacture and the same properties possessed by the tinctures of pharmacy, which commend these last to the medical profession, should be imitated as far as possible by manufacturers of Commercial Extract.

The latest editions of both Pharmacopoeias contain revised formulas for preparation of Tinctura Limonis, as shown in the following table:—

TO MAKE 1,000 PARTS OF TINCTURE (SPIRIT) OF LEMON.

Materials from which made.	BRITISH PHARMACOPOEIA.		U. S. PHARMACOPOEIA.	
	Ed'n 1885.	Ed'n 1898.	Ed'n 1890.	Ed'n 1900.
Name of preparation.	Tincture.	Tincture.	Spirit.	Tincture.
Oil of lemon.....			50	
Fresh lemon peel.....	125	250	50	500
Strength of alcohol employed (Vol. p.c.).....	57	90	95.1	94.9
Volume of product.....	1,000	1,000	1,000	1,000

It will be noted that Lemon Oil as such is no longer used in the manufacture of the tincture. The tinctures are made to contain large amounts of lemon peel extractive matter, both by using large amounts of peel, and by extracting this with strong alcohol, instead of with proof spirit, as directed in the British Pharmacopoeia of 1885.

The following analytical results were obtained with tinctures made in the laboratory according to B. P. directions, as above given.

Mean result upon *Tinctura Limonis*, prepared according to B. P. directions, Ed'n 1898.

Specific gravity . . . . .	0.8769
Rotation, 2 dm. at 20°C . . . . .	+3.8
Equivalent Lemon Oil . . . . .	1.2 p.c.
Alcohol (volume p. c.) . . . . .	75.08

It will be noted that the water present in fresh lemon peel, freed as much as possible from the white, inner layer, reduces the alcohol strength from 90 per cent in the original solvent, to 75 per cent in the finished tincture; and that the lemon oil in the tincture averages only 1.2 per cent. The maximum content of oil found in any tincture made here from commercial lemons, was 1.4 per cent.

As a matter of interest I furnished samples of these tinctures to several persons, to be used as flavouring material, in order that their value for such purpose might be judged by actual baking tests. The unanimous opinion was that they were of good quality, as to flavour, but much weaker than the ordinary lemon extract of commerce. It appeared to be necessary to use from two to four times the volume usually employed, in order to get satisfactory results in intensity of flavour.

The United States standard for Lemon Extract is as follows:—"Lemon Extract is the flavouring extract prepared from oil of lemon, or from lemon peel, or both, and contains not less than five (5) per cent by volume of oil of lemon."

"A flavouring Extract is a solution in ethyl alcohol of proper strength, of the rapid and odorous principles derived from an aromatic plant, or parts of the plant, with or without its colouring matter, and conforms in name to the plant used in its preparation."

"Oil of lemon is the volatile oil obtained by expression or alcoholic solution, from the fresh peel of the lemon (*Citrus limonum*), has an optical rotation (25°C.) of not less than +60° in a 100 mm. tube, and contains not less than four (4) per cent by weight of citral."

It would appear from the results upon Tincture of Lemon above quoted, that an extract of lemon, to contain five per cent of lemon oil, if prepared direct from the lemon peel with 90 per cent alcohol would require the employment of  $\frac{5}{90} \times 250 = 1,042$  parts of lemon peel to prepare 1,000 parts of the finished product. This is more than twice the weight of peel prescribed by the U. S. Pharmacopoeia (1900) for preparation of the tincture, and more than four times that required by the British Pharmacopoeia. It is indeed doubtful whether an extract of the kind supposed, could be so prepared, because of the large amount of water present in the lemon peel. This would reduce the strength of alcohol, in the finished extract, to about 30 per cent, a strength insufficient to effect the complete extraction of the oil from lemon peel.

It is not, however, to the lemon oil as a whole, that the flavouring value of lemon extract is chiefly due, but to the citral (Geranial) that it contains. Lemon oil contains from 3 to 4 per cent of citral (Squire's Companion, 18th Ed'n, p. 723), so that an extract containing 5 per cent of the oil may contain about 0.2 per cent of citral. Citral is stated by Squire (Op. cit. p. 727) to possess about 15 times the flavouring power of lemon oil; and it is evident that citral is the really important component of Extract of Lemon, as used for flavouring purposes. The direct estimation of citral is apparently the true basis of valuation. It is unfortunate that methods applicable to the exact determination of citral in commercial extract of lemon are not available. Work is now being done with a view to the elaboration and perfecting of such methods.

Oil of Lemon Grass (*Oleum Graminis Citrati*) contains citral. As obtained from this source citral has a flavour quite different from that of the lemon, and resembling that of verbena. Lemon Grass citral is, nevertheless, employed as an adulterant of lemon oil (Squire's, *Op. cit.* p. 725), and is doubtless substituted for lemon citral, in the cheaper lemon extracts. The perfecting of a chemical method for direct determination of citral, would not serve to distinguish between citral from lemon and citral from lemon grass. It is, perhaps, to ensure the presence of a true lemon product, that the standard fixed by the United States requires the presence of 5 per cent of oil of lemons. Since, however, it is possible to substitute lemon grass citral in place of lemon citral, in lemon oil itself, the fact of the presence of lemon oil terpenes (which constitute over 90 per cent of lemon oil) is not a guarantee of the genuineness of the article.

It would seem that a useful assay of lemon extract involves (1) a determination of citral (2) an identification of the citral as that from lemons. Determinations of alcohol and of lemon oil are not sufficient to establish the genuineness or the value of a lemon extract for flavouring purposes. Strong alcohol is not needed to keep the citral in solution, and its employment merely adds to the cost of the article, without increasing its value to the consumer. It certainly enables a high percentage of lemon oil to be dissolved; but, as we have seen, it is not upon the terpenes of lemon-oil that the flavouring value depends.

As in the case of many articles of food, which are valued chiefly for their flavour, bouquet or aroma, it must be granted that, in the present state of our knowledge, the trained palate or olfactory nerve of the expert is a surer guide than the analytical methods of the laboratory. Until we perfect a process for the determination of citral, and further devise a method of certainly distinguishing between the citral derived from lemons and that derived from lemon grass, we must depend upon the connoisseur in flavours to enable us to place, in proper order of value, the various lemon extracts of commerce. It is true that we can show (as is done in this, and previous reports) the content in alcohol, and in lemon oil; but a high strength in alcohol is only requisite to keep the oil in solution; and it is not upon the oil content that the value of the extract depends, but upon the amount of lemon citral present. This is so small that a very weak alcohol suffices to hold it in solution.

If the extract is made from fresh lemon peel, as directed by the pharmacopoeias, in the preparation of tinctures, it is certainly necessary to employ strong alcohol, because the water in the peel reduces the strength of the alcohol proportionately to the amount of peel used; and we have seen that to obtain an extract of 5 per cent oil strength, we must employ an amount of peel at least equal to the weight of extract desired. But commercial extract of lemon is seldom or never made from the peel, but from the oil. Dilute alcohol is not further diluted in the operation of dissolving citral from the oil, as in the case of dissolving citral from the peel. Hence a comparatively weak alcohol, even below proof strength, is quite efficient; and while taking but small amounts of the terpenes into solution, effects a notable solution of citral, with the production of an extract which commands ready sale.

It is not even necessary that lemon oil should be employed in the manufacture of lemon flavouring extract. A very satisfactory extract can be made by the direct solution in alcohol of so called, terpeneless oil of lemon. This is the residue from a fractional distillation of lemon oil, and contains the citral, normally belonging to the lemon oil together with citronellal, and other components to which the flavour of lemon oil is due.

To sum up:—

1. Extract of lemon is valued for its characteristic flavour.
2. This flavour depends upon the presence of certain constituents of lemon oil.
3. The terpenes, which constitute more than 90 per cent of lemon oil, are not important from the point of view of contributing flavour to the oil.
4. It is mainly to dissolve the terpenes of lemon oil that strong alcohol is used as a solvent.
5. The citral, citronellal, and other flavour giving components of lemon oil, constitute less than 10 per cent. of the oil, and may be effectively got into solution, from the oil, by weak alcohol.

6. If these flavouring components are derived immediately from fresh peel, a strong alcohol must be employed, on account of the water present in the peel. The alcohol content of the finished extract will, however, be low.
7. A good flavouring extract can be prepared either from fresh lemon peel, from lemon oil, or from so called terpeneless lemon oil. It is according to commercial usage to prepare it from the lemon oil, rather than from the peel.
8. A weak alcohol (proof strength) suffices to dissolve the flavour giving constituents from the oil; and the employment of a stronger alcohol merely adds to the cost of the extract, without corresponding improvement of quality.
9. The citral of lemon-grass oil is not to be confounded with that from true lemon oil. Both citrals are more or less indefinite bodies, being essentially aldehydic, but associated with aromatic substances which are lemon-like in one case and more or less verbena-like in the other. The distinction between them is not, at present, evident, to chemical methods.
10. Methods for the quantitative determination of citral are being studied; and it is hoped that a practicable method may be discovered, thus enabling Lemon Extract to be judged by determination of the component to which it owes its commercial importance.

Of the 75 samples covered by the present report, only 13 contain above 1 per cent of lemon oil. These are as follows, and are arranged in order of their lemon oil content:—

No.		Lemon oil.	Alcohol.
39621	Baird's.....	7.6	89.72
39698	Dr. Scott, St. John, N.B. ....	7.0	88.72
39618	Nat. Drug & Chemical Co. ....	5.0	82.74
39829	Gold Standard Mfg. ....	4.4	80.94
43635	W. A. Georgeson Co., Calgary. ....	3.6	90.32
38882	F. F. Dalley Co. ....	3.6	82.64
41753	F. F. Dalley Co. ....	3.2	80.40
42857	F. F. Dalley Co. ....	3.0	83.16
38881	F. F. Dalley Co. ....	2.8	71.48
40380	Henri Jonas Co. ....	2.1	71.78
39827	Campbell Bros. & Wilson ....	1.6	56.82
41755	Seeley .....	1.5	61.96
39830	White Star Mfg. Co. ....	1.0	70.70

62 samples contain less than 1 per cent of lemon oil and 60 samples contain less than 0.5 per cent lemon oil. It is quite apparent that the appreciation given to Lemon Extract by consumers is dependent upon something else than its lemon oil content.

When considerable amounts of lemon oil are in solution, the alcoholic strength is necessarily high. The absence of terpenes makes it unnecessary to employ so strong an alcohol. Among the 62 samples containing less than 1 per cent of oil, some are very high in alcohol, and apparently to no purpose.

From 80 to 90 per cent alcohol .....	Samples
" 70 " 80 " .....	4
" 60 " 70 " .....	3
" 50 " 60 " .....	1
" 40 " 50 " .....	5
" 30 " 40 " .....	14
" 20 " 30 " .....	8
" 10 " 20 " .....	24
" 10 " 20 " .....	3

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It thus appears that 49 samples, or 66 per cent of the total collection, are made with alcohol of less than proof strength; while 27 samples, or 36 per cent of the collection, contain alcohol of about half the strength of proof. Yet several of these appear to be very acceptable flavouring extracts.

I have the honor to be sir,

Your obedient servant,

A. MCGILL,

Chief Analyst.



BULLETIN No. 198—FLAVOURING EXTRACT OF LEMON.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report (Is not an expression of opinion.)	Sp. Gr. of Sample.	RESULT OF ANALYSIS.					No. of Sample.	Remarks and Opinion of the Chief Analyst.
				Quantity.	Conts.				Rotation in 2 dm. tube at 20°C.	Equivalent Lemon Oil — Vol.	Sp. Gr. of Oil-free distillate (Calculated).	Alcohol by Vol.			
DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.															
1909.											p. c.		p. c.		
Dec. 6	Flav. Extract of Lemon.	41751	Nat. Drug & Chem. Co., Halifax, N.S.	3	bots.	20	Vendors.....	'Sovereign' brand	0.9173	+ 0.9	0.3.0	9199	57.00	41751	
" 7	"	41752	J. Frank Crowe & Co., Halifax, N.S.	3	"	30	Imperial Extract Co., Toronto.	"	0.9080	+ 0.4	0.1.0	9083	27.62	41752	
" 7	"	41753	R. B. Seaton & Co., Halifax, N.S.	3	"	50	F. F. Dalley Co., Hamilton.	"	0.8494	+ 10.5	3.2.0	8625	80.40	41753	
" 8	"	41754	E. B. Traoy, Halifax, N.S.	3	"	30	Imperial Extract Co., Toronto.	"	0.9718	+ 0.7	0.2.0	9736	22.32	41754	
" 10	"	41755	Summer & Cassidy, Truro, N.S.	3	"	45	Seeley, Windsor, Ont.	"	0.9922	+ 4.7	1.5.0	9087	61.96	41755	
DISTRICT OF PRINCE EDWARD ISLAND—THEO. MOORE, INSPECTOR.															
Dec. 6	Flav. Extract of Lemon.	38606	A. R. Paquet, Souris.	6	oz.	30	S. H. Ewing & Sons, Montreal.	'Club' soluble extract.	1.0034	+ 19.7	None.	0.9797	16.52	38606	Contains 5-4 p. c. cane sugar.
" 6	"	38607	L. McDonald, Souris.	6	"	24	Unknown	Strongest essence of Lemon.	0.9584	+ 0.6	0.2.0	9612	33.60	38607	
" 6	"	38608	A. Currie & Co., Souris.	6	"	75	Dr. Scott, St. John, N.B.	Guaranteed free from all adulterations.	0.8261	+ 22.6	7.0.0	8381	88.72	38608	
" 7	"	38609	Mathew & McLean, Souris.	6	"	48	Tropical Extract Co., Montreal.	Imperial flavouring extract.	0.9504	+ 0.7	0.2.0	9323	39.92	38609	
" 11	"	38610	Geo. Rackham, Charlottetown.	6	"	54	Carvell Bros., Charlottetown.	McLaren's invincible extract true lemon.	0.9405	+ 0.6	0.2.0	9417	46.20	38610	

## DISTRICT OF NEW BRUNSWICK—JNO. C. FERGUSON, INSPECTOR.

Dec.	2	Flav. Extract of Lemon.	39618	Nat. Drug & Chem. Co. Ltd., St. John, N.B.	3 bts.	45	Vendors	'Star' brand	0 8242	+17 8	5 60	8333	90 20	39618
"	2	"	39619	Dearborn & Co., St. John, N.B.	3 "	75	"	'Dearborn' brand	0 9461	+ 0 7	0 20	9477	42 58	39619
"	8	"	39620	G. E. Barbour Co. Ltd., St. John, N.B.	3 "	60	"	"	0 9309	+ 0 6	0 20	9312	51 72	39620
"	17	"	39621	The Baird Co. Ltd., Woodstock, N.B.	3 "	25	"	Labeled Lemon Bairds super Extra, fruit flavouring extract.	0 8233	+23 4	7 60	8349	89 72	39621
1910.	Jan. 6	"	39622	Geo. Stables, Newcastle, N.B.	3 "	30	White Cross Mfg. Co., Toronto.	Pure lemon, White Cross Mfg. Co.	0 9749	+ 2 2	0 70	9772	19 08	39622

## DISTRICT OF QUEBEC—E. BELAND, INSPECTOR.

Dec.	1	Flav. Extract of Lemon.	36687	Ludger Mignault, St. Anselme.	3 bts.	30	Dr. Ed. Morin, Quebec.	"	0 9856	+ 0 6	0 20	9864	10 32	36687
"	1	"	36688	Alphonse Daimas, St. Anselme.	3 "	30	Whitehead & Turner, Quebec.	"	0 9624	+ 0 6	0 20	9643	31 16	36688
"	1	"	36689	J. M. Ouillet, St. Anse-Ime.	3 "	54	W. Brunet & Cie, Quebec.	"	0 8738	+ 0 8	0 30	8743	76 08	36689
"	1	"	36690	Mad. Veave F. X. Guay, St. Anselme.	3 "	45	Whitehead & Turner, Quebec.	"	0 9722	+ 0 5	0 10	9728	23 22	36690
"	1	"	36691	Charle Audet, St. Anse-Ime.	3 "	30	J. B. Renaud & Cie, Quebec.	"	0 9728	+ 0 4	0 10	9736	22 52	36691

## DISTRICT OF ST. HYACINTHE—J. C. ROULEAU, INSPECTOR.

Dec.	6	Flav. Extract of Lemon.	38879	N. N. Boucher & Cie, La Baie	5 bts.	50	H. Jonas & Cie, Montreal.	'Triple'	0 8770	+ 0 8	0 20	8794	74 16	38879
"	7	"	38880	P. Blain, Vercheres.	3 "	30	Hudon & Orsali, Montreal.	'Signal'	0 9746	+ 0 4	0 10	9760	20 24	38880
"	9	"	38881	J. A. Minard, Farnham.	3 "	30	The F. F. Dalley Co., Ltd., Hamilton.	"	0 8737	+ 8 8	2 80	8863	71 48	38881
"	20	"	38882	F. W. Gibson, Danville.	3 "	60	"	"	0 8515	+11 4	3 60	8367	82 64	38882
"	21	"	38883	A. Hamel, Magog.	3 "	25	Mathewson's Sons, Montreal.	'M. Sons'	0 9666	+ 0 7	0 20	9668	28 92	38883

BULLETIN No. 198—FLAVOURING EXTRACT OF LEMON.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vendor.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	Inspector's Report. (Is not an expression of opinion.)	Sp. Gr. of Sample.	RESULT OF ANALYSIS.					No. of Sample.	Remarks and Opinion of the Chief Analyst.
				Quantity.	Cents.				Rotation in dry tube at 20 C.	Equivalent Lemon Oil Vol.	Sp. Gr. of Oil-soluble material (Calculated).	Alcohol by Vol.			

DISTRICT OF MONTREAL—J. J. COSTIGAN, INSPECTOR.

1909.													
Dec.										P. c.		P. c.	
1	Flav. Extract of Lemon.	40376	The Brodie Mfg. Co., Montreal.	3	bots.	40	Vendors .....	0.9623	+ 0.4	0.1	0.9647	30.80	40376
"	"	40377	Pelletier et freres, Chabotize Square, Montreal.	17	"	30	"	0.9657	+ 0.7	0.2	0.9696	29.12	40377
"	"	40378	James Duncan, Lachine, P.Q.	3	"	25	"	0.9667	+ 10.0	0.3	0.9675	28.36	40378
"	"	40379	Herron Leblanc Ltd., St. Paul St., Montreal.	573	"	40	Vendors .....	0.9417	+ 0.7	0.2	0.9424	43.74	40379
"	"	40380	Henri Jones & Co., Montreal.	3	"	38	"	0.8756	+ 7.2	2.1	0.8855	71.78	40380

DISTRICT OF OTTAWA—J. A. RICKEY, INSPECTOR.

Dec.	3	Flav. Extract of Lemon.	42857	Walter Cunningham, Ottawa.	3	bots.	75	The F. F. Dalley Co., Ltd., Hamilton.	0.8497	+ 9.0	3.0	0.8552	83.16	42857
"	3	"	42859	A. P. Johnson, Ottawa.	3	"	30	H. N. Bate & Sons, Ottawa.	0.9688	+ 0.7	0.2	0.9693	26.68	42859
"	11	"	43861	The City Grocery, Carleton Place.	3	"	30	Unknown	0.9746	+ 0.7	0.2	0.9755	29.76	42861
"	14	"	42863	The Anderson Langstaff Co. Ltd., Kemptville.	3	"	30	Pure Gold Mfg. Co., Toronto.	0.9685	+ 0.4	0.1	0.9693	26.68	42863

17	4865) Chester Casselman, 3 Chesterville.	30	The J. M. Lowers Co., Ltd., Toronto.	Labelled Our Owing Concen- tred pure fruit flav. ext. Lemon.	0 1 0 9753 20 94 42865
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## DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.

Nov. 29	Flav. Extract of Lemon.	6 oz.	35	Vendor	0 9152 + 0 5	0 1 0 9472 58 27 42777
29	"	"	30	"	0 8694 + 0 8	0 2 0 8636 80 62 42778
Dec. 1	"	6 "	35	"	0 9690 + 0 4	0 1 0 9103 61 30 42779
1	"	6 "	40	"	0 8749 + 0 7	0 2 0 8781 74 68 42780
1	"	6 "	50	"	0 8383 + 1 0	0 3 0 8426 57 38 42781

## DISTRICT OF TORONTO—H. J. DAGEK, INSPECTOR.

Dec. 17	Flav. Extract of Lemon.	3 bats.	17	Vendors.	0 9763 + 0 4	0 1 0 9764 19 90 41437
17	"	3 "	23	"	0 9453 + 0 5	0 1 0 9460 43 58 41438
18	"	3 "	30	Pure Gold Mfg. Co., Ltd., Toronto.	0 9688 + 0 7	0 2 0 9689 27 04 41439
22	"	3 "	38	Vendors.	0 9446 + 0 7	0 2 0 9463 43 38 41440
23	"	3 "	30	Imperial Extract Co., Toronto.	0 9678 + 0 7	0 2 0 9685 27 42 41446

## DISTRICT OF LONDON—T. KIDD, INSPECTOR.

Dec. 6	Flav. Extract of Lemon.	3 bats.	30	H. P. Eckert & Co., To- ronto. Vendor	0 9718 + 0 7	0 2 0 9717 24 44 30870
10	"	3 "	45	"	0 9188 + 1 2	0 4 0 9216 56 26 30885
10	"	3 "	45	"	0 9680 + 0 9	0 3 0 9106 61 14 30886
10	"	3 "	30	Imperial Extract Co., Toronto.	0 9678 + 0 7	0 2 0 9679 27 98 30889
21	"	3 "	30	"	0 9672 + 0 5	0 1 0 9682 27 62 44710

BULLETIN No. 198—FLAVOURING EXTRACT OF LEMON.

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				Quantity.	Cents.				Rotation in 2 dm. tube at 20° C.	Equivalent Lemon Oil	Sp. Gr. of Oil free distillate (Calculated).	Alcohol by Vol.		
DISTRICT OF WINDSOR—JNO. TALBOT, INSPECTOR.														
1909.										p. c.	p. c.			
Dec. 6	Flav. Extract of Lemon.	42638	F. L. Wagner, Aylmer, Ont.	3	bots.	30	Young & Winfield, Hamilton.	Favourite extract of lemon.	0.9688	+ 0.8	0.30	9691	26.86	42638
" 7	"	42664	J. A. Trestrain, Tillsonburg.	3	"	25	McLaren's, Hamilton.	'Thistle' brand extract.	0.9694	+ 0.9	0.30	9716	24.44	42664
" 8	"	42668	Potts Clark Co., Simcoe.	3	"	30	Elyn Blain, Toronto.	"	0.9770	+ 0.8	0.30	9775	18.74	42668
" 9	"	42677	Jas. Burns, Brantford.	3	"	25	F. F. Dalley Co., Hamilton.	"	0.9530	+ 0.7	0.20	9537	38.98	42677
" 9	"	42678	Geo. J. Harp, Brantford.	3	"	30	Gorman Eckert Co., London.	(Lemon) 'Jewel' flavouring extract.	0.9650	+ 0.6	0.20	9668	28.92	42678
DISTRICT OF MANITOBA—A. C. LARIVIERE, INSPECTOR.														
Dec. 6	Flav. Extract of Lemon.	39826	Blue Ribbon Mfg. Co., Winnipeg.	3	bots.	50	Vendors	'Blue Ribbon' extract.	0.9398	+ 0.5	0.10	9403	46.96	39826
" 6	"	39827	Campbell Bros. & Wilson, Winnipeg.	3	"	35	"	'Royal Shield' extract.	0.9092	+38°-9	1.60	8868	71.26	39827
" 7	"	39828	The Dyson Co., Winnipeg.	3	"	60	"	'Red Cross' extract.	0.9463	+ 0.9	0.30	9473	42.78	39828
" 7	"	39829	Gold Standard Mfg. Co., Winnipeg.	3	"	45	"	'Gold Standard' extract.	0.8569	+14.1	4.40	8612	80.94	39829
" 7	"	39830	The White Star Mfg. Co., Winnipeg.	3	"	45	"	'White Star' extract.	0.8308	+ 3.4	1.00	8882	70.70	39830

Contains 8.54 p.c. cane sugar

DISTRICT OF CALGARY—R. W. FLETCHER, INSPECTOR.

Dec. 10	Flav. Extract of Lemon.	43631	L. B. Cochrane, Medicine Hat.	3 bota.	75	Gold Standard Mfg. Co., Winnipeg.	0 8575 + 0 7	0 2 0 8586	81 90	43631
" 10	"	43632	H. H. Ireland, Medicine Hat.	3 "	105	McLaren's, Ltd., Hamilton.	0 9428 + 0 8	0 3 0 9438	44 92	43632
" 10	"	43633	R. Dunn, Medicine Hat.	3 "	75	Gold Standard Mfg. Co., Winnipeg.	0 8517 + 0 6	0 2 0 8538	83 68	43633
" 17	"	43634	Copas & Emerson, Calgary.	3 "	75	G. F. Sutton Sons Co., London, Eng.	0 9442 + 0 5	0 1 0 9470	42 98	43634
" 17	"	43635	W. A. Georgeson & Co., Ltd., Calgary.	3 "	75	Vendors	0 8271 + 11 4	3 6 0 8329	90 32	43635

DISTRICT OF VANCOUVER—J. F. POWER, INSPECTOR.

Dec. 9	Flav. Extract of Lemon	37793	Larsen & Anne	3 bota.	75	Empress Mfg. Co.	0 9552 + 0 4	0 1 0 9560	37 36	37793	
" 9	"	37794	C. E. Hoffard, New Westminster.	3 "	60	Sherriffs Co.	0 9391 + 0 4	0 1 0 9403	46 96	37794	
" 10	"	37795	W. Hetherington, Vancouver.	3 "	75	McLaren & Co.	McLaren's Invincible extract	0 9419 + 0 4	0 1 0 9429	46 02	37795
" 13	"	37796	R. Ackerman, Vancouver	3 "	60	Pure Fruit Extract Co.	Pure fruit extract.	0 9853 + 0 7	0 2 0 9856	11 10	37796
" 13	"	37797	T. Russell, Vancouver.	3 "	75	Kelly Douglas Co., Vancouver, B.C.	'Nabob' brand.	0 9460 + 0 5	0 1 0 9463	43 28	37797

DISTRICT OF VICTORIA—D. O'SULLIVAN, INSPECTOR.

Dec. 10	Flav. Extract of Lemon.	41599	Windsor Grocery Co.	3 bota.	75	Sherriffs, Toronto.	Sherriffs Imperial quintessence of true lemon.	0 9407 + 0 7	0 2 0 9441	44 72	41599
" 10	"	41600	W. Speed.	3 "	60	Empress Mfg. Co., Vancouver, B.C.	'Empress' brand	0 9535 + 0 4	0 1 0 9551	37 96	41600
" 10	"	41601	Saunders Grocery Co., Ltd.	3 "	75	Pure Gold Mfg. Co., Toronto.	Pure Gold flavouring extracts	0 9378 + 0 5	0 1 0 9411	46 56	41601
" 14	"	41602	R. Erskine & Co.	3 "	75	Pioneer Coffee and Spice Mills, Victoria, B.C.	'Star brand'	1 0149 + 1 9	0 0 0 9718	24 26	41602
" 15	"	41603	W. A. Jameson Coffee Co.	3 "	60	W. A. Jameson Coffee Co., Victoria, B.C.	Nector flavouring extract.	0 9555 + 0 9	0 3 0 9570	36 72	41603

Contains cane sugar