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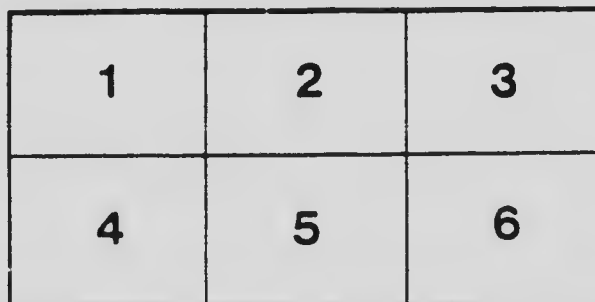
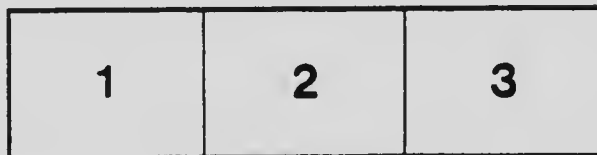
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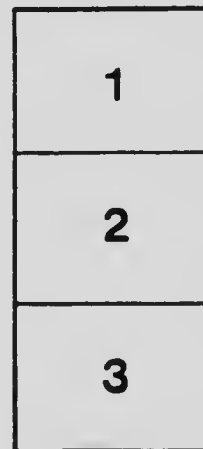
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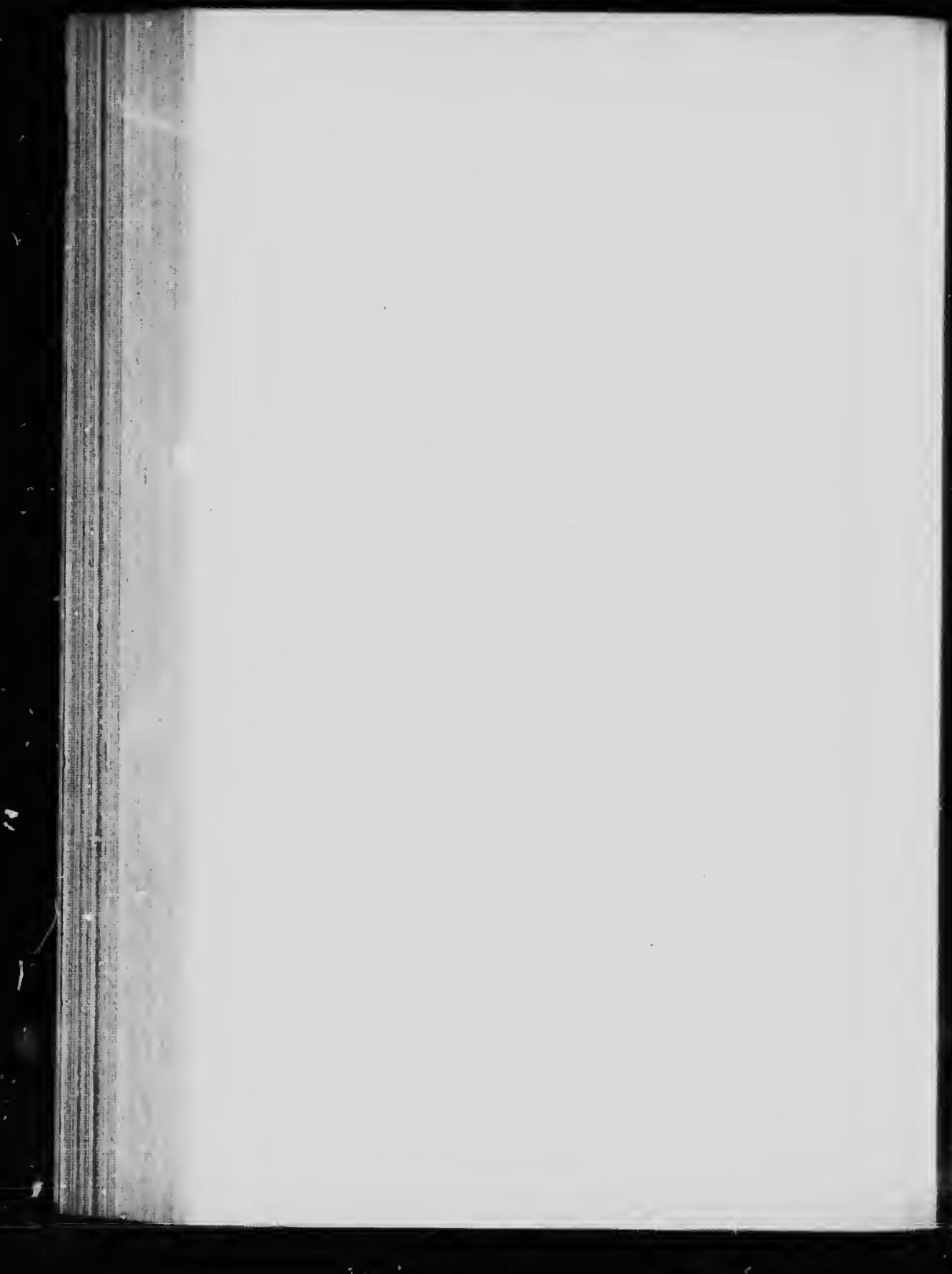
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LABORATORY  
OF THE  
INLAND REVENUE DEPARTMENT  
OTTAWA, CANADA

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BULLETIN No. 295

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LIME JUICE

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LABORATORY  
OF THE  
INLAND REVENUE DEPARTMENT

OTTAWA, CANADA

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BULLETIN No. 295

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LIME JUICE

OTTAWA, October 23, 1914.

J. U. VINCENT, Esq.,  
Deputy Minister,  
Inland Revenue,

SIR,—I have the honour to hand you a report dealing with one hundred (100) samples of lime-juice, collected officially by our inspectors from May to September of this year.

The last report upon this article was dated July 1913, and had regard to collections made in the earlier part of that year. It is published as Bulletin No. 262. Of thirty samples therein reported only five meet the requirements of departmental standards as published in Circular G 947. These standards, originally legalized, 13th March, 1911, have been challenged in two respects. It is claimed that commercial lime-juice, of guaranteed genuineness, does not always contain 10 per cent of its weight of solids; also, that limits for optical activity should be extended to read from  $+0.5^{\circ}$  to  $-1.0^{\circ}$  of the Soleil Ventzke Scale.

In order to determine the facts, application was made to importers and refiners for certified samples of raw and clarified lime-juice, and the firms of L. Rose & Co., London, England, the National Drug and Chemical Company, of Canada, and Lymans, Limited, of Montreal, were kind enough to furnish me with nine samples under affidavit of genuineness. These gave the following analytical results:—

Nos. 1, 2 and 3, represent the article as manufactured by the National Drug and Chemical Company, Nos. 4 and 5 are the crude and the refined juice as furnished by L. Rose and Company, Nos. 6, 7, and 8 are West Indian lime-juice, as imported by the National Drug and Chemical Company, No. 9 is raw limejuice as imported by Lymans, Limited, from Dominica, B.W.I.

	Total Solids per cent.	Citric Acid per cent.	Polarimeter at 20° C.	
No. 1 .....	8.89	7.84	-0.42	Refined.
" 2 .....	8.81	7.91	-0.27	"
" 3 .....	8.79	7.91	-0.78	"
" 4 .....	9.65	8.75	-0.85	Raw.
" 5 .....	9.23	8.33	-0.51	Refined.
" 6 .....	9.11	7.91	-0.91	Raw.
" 7 .....	8.40	7.56	-0.78	"
" 8 .....	8.87	7.42	-0.61	"
" 9 .....	9.18	8.05	-0.85	"
Means .....	8.99	7.96	-0.66	
Means for raw lime juice .....	9.04	7.94	-0.80	
Means for refined lime juice .....	8.93	7.99	-0.49	

It would appear from the above that the process of refining, which is asserted to consist merely of filtration, with, in most cases the addition of a minute quantity of benzoate of soda, or other preservative, effects but little change in the total solids; has no effect upon reduction of the citric acid content, and is chiefly evidenced by the removal of traces of materials which increase the laevo-rotatory character of the raw juice.

Four samples of raw lime-juice, received by me from the port of Halifax in 1902, and believed to represent importations of that year although not vouched for by affidavit, gave the following results:—

	Total Solids per cent.	Citric Acid per cent.	Polarimeter at 20° C.	Density.
A .....	9.10	8.51	0.0	1.0308
B .....	9.02	8.17	0.0	1.0393
C .....	8.82	7.59	0.0	1.0363
D .....	8.70	7.70	0.0	1.0370
Means .....	8.91	7.99	0.0	1.0381

In a letter dated 31st October, 1913, Inspectors Ogston and Moore, Analytical Chemists, London, England, comment upon our standards for lime-juice as follows: "The citric acid figure is correct but the total solids figure is fixed too high. We find the total solids to be between 8.50 and 9.00 per cent."

The British Pharmacopoeia does not furnish any standards for Lime-Juice, but defines lemon juice (*Succus limonis*) as follows:—

"The freshly expressed juice of the ripe fruit of *Citrus Medica*, Linn., var. *Limonius*, Hook, fil. Specific gravity 1.030 to 1.040; citric acid 7 to 8 per cent. Ash not more than 3 per cent."

The United States Pharmacopoeia defines Lemon juice in similar terms.

Leach, "Food Inspection Analysis," 2nd Edition, p. 925, states that both varieties of the genus *Citrus* are used indiscriminately for furnishing commercial lime-juice.

In this connection I am favoured with the following letter from the Government Botanist at the Port-of-Spain, Trinidad:—

DEPARTMENT OF AGRICULTURE,  
PORT-OF-SPAIN, TRINIDAD, March 9, 1914.

DEAR SIR,—I have recently received a copy of *Bulletin 262* of the Laboratory of the Inland Revenue Department, Canada, dealing with lime fruit juice, and in it I noticed that lime-juice is defined as "the fresh fruit juice obtained from lime fruit (*Citrus Limetta*)."

The lime-juice with which you are dealing is, I understand, the ordinary lime-juice of commerce, of which the West Indies are the largest producers. This lime-juice, is, however not obtained from *Citrus Limetta*, but from *Citrus Medica* var. *acida*. There was formerly confusion between the two plants but this was cleared up as indicated by the following extract from the *Bulletin of the Royal Gardens, Kew*, for 1894, page 113:—

"One of the most distinct species of *Citrus* is *C. Medica*, which includes the citron, lemon, and the limes. Of the limes there are sweet and sour limes, characterized, according to Roxburgh, by small pinkish flowers, usually four petals, and a perfectly spherical fruit, having a thin skin of a lively yellow colour and pale acid juice. Sir Joseph Hooker states that the word lime is promiscuously applied to fruits very different in character, especially in British India, where the sweet limes of various forms are universally spoken of under that name.

"The sour lime, although probably introduced from the East Indies, has made its second home in the West Indies, where, indeed, is its present principal area of systematic cultivation. The history of the sour lime is given by Sir Joseph Hooker in the *Botanical Magazine*, tab. 6745. It was first described by Rumph (*Hortus Amboinensis*, 11, p. 107, tab. 29), in 1750, under the name of *Limonellus*, alias *Limotenus*, or thin-skinned lemon. *C. Limonellus* is also described by Miquel, who says it is cultivated everywhere in the Dutch East Indies. The same plant is well-figured by Wight as *C. Limetta*, Risso (*Icones*, t. 958), who says it is wild in the Nilgiris. In the West Indies, McFadyen very clearly described it as *Citrus Lima*, 'a thorny shrub with ovated leaves, pent-merous white flowers, small nearly globose, yellow fruit, with thin skin, and an abundance of pure acid juice; it is naturalized in Jamaica, forming strong fences.' Brandis (*Forest Flora, Ind.*, p. 52), rightly places the sour lime of India as a variety of *Citrus Medica*, L.; other authors refer the sour or West Indian lime to *C. Limetta*, Risso, its nearest European representative, but this latter differs in its sweet juice. The botanical position of the West Indian lime as an acid variety of *Citrus Medica*, L. is now established. This small acid lime seems confined to tropical and sub-tropical zones. It does not appear to flourish in Southern Europe, and as already stated, its present headquarters under cultivation are in the West Indies, where in the islands of Montserrat, Dominica and Jamaica it is commercially utilized for the production of lime-juice and essential oil."

You will have botanical authorities accessible whom you will be able to consult, and if they confirm this view, I would suggest that the official Canadian definition of lime-juice should be altered accordingly.

I remain, yours faithfully,

(Sgd.) W. N. FREEMAN,  
Government Botanist, Acting Director of Agriculture.

In the light of the evidence furnished herewith, it will be necessary to amend present standards for lime-juice, as these appear in Circular No. G 947, as follows:—



*Lime-Juice, Lime Fruit Juice* is the freshly expressed juice of the ripe fruit of Citrus (various species); and has a specific gravity at 20° C, not less than 1.030 and not greater than 1.040, and contains not less than eight (8) per cent of solids and not less than (7) per cent of free citric acid. Its optical activity (rotatory power to polarized light) lies between the limits of +0.5° and -1.0° of the Soleil Ventzke Scale, when observed in a column of 200 mm. in length, at 20° C.

The samples herein reported have been judged by these standards and indicate as follows:

Genuine lime juice . . . . .	50 samples.
Below standard in solids, but contain 7 p.c. citric acid	16 "
Less than 1 p.c. below standard in citric acid. . . . .	16 "
Adulterated as containing less than 6 p.c. citric acid	10 "
Sweetened juice . . . . .	8 "

Total. . . . . 100

Eight samples contain sugar (or glucose) in more than traces. When the presence of sugar is acknowledged upon the label, or the article is offered under a name which informs the purchaser in accord with the facts, no fraud is committed. When sold as lime-juice, the addition of sugar, glucose, or anything else, constitutes adulteration. Details of these samples are as below:—

No.	Total Solids.	Citric Acid.	Sugar Approximate.	Labelled or Sold as
2134. . . . .	19.50	3.15	15	Lime Juice Cordial.
61423. . . . .	12.78	8.47	4 (glucose)	Lime Juice.
61526. . . . .	10.39	1.96	8	"
61905. . . . .	12.49	5.04	7	"
61919. . . . .	10.99	7.42	4	Lime Juice Cordial.
51988. . . . .	27.98	3.08	25	Lime Juice.
61933. . . . .	31.36	0.91	30	Lime Juice Cordial.
62262. . . . .	8.98	5.23	3	"
				Lime Juice.

In the absence of any standards for, or legal definition of lime-juice cordial, it is impossible to charge adulteration in the cases of any samples sold under this name. At the same time, it is worthy of note that numbers 2134, 51988 and 61933 contain less than half their volume of lime-juice.

No. 61526, being sold as lime-juice, must be regarded as adulterated.

In a strict sense, 16 samples which are found below standard in solids, although containing 7 per cent of citric acid; as well as 16 other samples which are below the standard of 7 per cent citric acid, must be regarded as adulterated under the Act.

Inasmuch, however, as this is the first general inspection under these standards, I would respectfully suggest leniency in these cases.

Preservatives, chiefly benzoic or salicylic acid, are in no case present in dangerous amount. It is to be noted that, under the terms of an Order in Council of 4th April of this year, the presence of preservatives must be declared on the label; and benzoic acid must not exceed 1 part in 1,000 parts, nor salicylic acid, 1 part in 5,000 parts of the food material.

I would further recommend publication of this report as Bulletin No. 295.

I have the honour to be, Sir,  
Your obedient servant,

A. MCGILL,  
Chief Analyst.

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.	
				Quantity.	Cents.	Manufacturer.	Furnisher.

## DISTRICT OF NOVA SCOTIA—

1914.							
June 11	Lime Juice..	41866	Kirk Bros., Yarmouth, N.S.	3 bots.	30	Sutcliffe & Bingham, Manchester, Eng.	McClure & Langley, Toronto.
" 11	"	41867	Cain Bros., Yarmouth, N.S.	3 "	30	Nat. Drug Co., St. John, N.B.	Mfrs.....
" 29	"	41868	Nat. Drug & Chem. Co., Halifax, N.S.	3 "	20	Vendors.....	"
July 8	"	41869	A. L. Doyle & Co., Halifax, N.S.	3 "	45	Nat. Drug Co., Halifax, N.S.	Mfrs.....
" 8	"	41870	Wentzells, Ltd., Halifax, N.S.	3 "	36	Howard Mfg. Co., Halifax, N.S.	"

## DISTRICT OF NOVA SCOTIA—

Sept. 12	Lime Juice..	53736	A. R. Smith, New Glasgow, N.S.	3 bots.	45	Sutcliffe & Bingham, Manchester, Eng.	Unknown.....
" 12	"	53737	S. M. Lockhart & Co., New Glasgow, N.S.	3 "	45	"	"
" 12	"	53738	A. J. Roop, New Glasgow, N.S.	3 "	45	Nat. Drug & Chem. Co., Halifax, N.S.	Mfrs.....
" 12	"	53739	A. A. McDonald, New Glasgow, N.S.	3 "	45	"	"

## DISTRICT OF NEW BRUNSWICK—

June 8	Lime Juice..	59526	Nat. Drug & Chem. Co., Ltd., St. John, N.B.	3 bots.	39	Vendors.....	"
" 11	"	59527	Dearborn & Co., St. John, N.B.	3 "	45	"	"
" 17	"	59528	Leger Drug Co., Ltd., Moncton, N.B.	3 "	45	"	Nat. Drug & Chem. Co., Ltd., St. John, N.B.
" 23	"	59529	Estate of A. J. Waterson, St. Stephen, N.B.	1 bot.	50	"	"
" 26	"	59530	E. E. King, Woodstock, N.B.	3 bots.	30	H. W. Cole & Co., Ltd., St. John, N.B.	"

## DISTRICT OF QUEBEC—

May 19	Lime Juice..	56271	Jos. Masson, 808 rue St. Valier, Quebec.	3 bots.	105	Nat. Drug Co., Montreal.	Mfrs.....
" 22	"	56272	J. D. Marier, 136 rue Dorchester, Quebec.	3 "	135	"	J. B. Renaud & Cie.
" 22	"	56273	A. Pichette, 176 rue Dorchester, Quebec.	3 "	90	L. Rose & Co., Ltd., London & Leith.	"
" 22	"	56274	F. X. Goslin, 207 rue la Couronne, Que.	3 "	90	"	"
" 26	"	56275	C. Riverin, 55 rue de la Couronne.	3 "	105	"	"

## LIME JUICE.

Inspector's Report. (Is not an expression of Opinion).	Results of Analysis.				No. of Sample.	Remarks and Opinion of the Chief Analyst.
	Spt. gr. of Juice.	Total Solids.	Acidity as Citric Acid.	Rotation (2 dm.)		
<b>R. J. WAUGH, INSPECTOR.</b>						
		p. c.	p. c.			
Kkovah Brand.....	1.0294	7.43	6.86	- 0.5	Salicylic acid.	41866 Below standard. Citric=0.14.
Sovereign Brand.....	1.0294	7.94	7.84	0.0	.....	41867 Genuine.
" " .....	1.0356	8.14	8.00	- 0.3	Salicylic acid.	41868 "
.....	1.0380	8.35	8.19	- 0.5	" ..	41869 "
Howards West India Lime Juice.	1.0323	6.67	6.58	+ 0.2	.....	41870 Below standard. Citric=0.42.

**W. A. PETITPAS, TEMPORARY INSPECTOR.**

.....	1.0285	6.89	6.58	- 0.3	Salicylic acid.	53736 Below standard. Citric=0.42.
.....	1.0297	6.55	6.40	- 0.5	" ..	53737 Below standard. Citric=0.60.
Sovereign.....	1.0374	8.70	8.12	- 0.5	Trace salicy- lic acid.	53738 Genuine.
" .....	1.0377	8.26	8.19	- 0.3	Salicylic acid.	53739 "

**JNO. C. FERGUSON, INSPECTOR.**

Imported and bottled by vendors.	1.0322	10.65	8.12	- 0.3	.....	59526 Genuine.
" " .....	1.0335	9.64	7.77	- 0.3	.....	59527 "
Superior Dominica .....	1.0374	11.21	8.26	- 0.5	.....	59528 "
.....	1.0345	10.08	7.98	- 0.5	.....	59529 "
Thistle Brand.....	1.0492	11.04	8.19	- 0.2	Salicylic acid.	59530 "

**F. X. W. E. BELAND, INSPECTOR.**

.....	1.0200	6.09	6.02	0.0	.....	56271 Below standard = 0.98.
.....	1.0349	8.22	7.84	- 0.4	.....	56272 Genuine.
.....	1.0346	8.10	7.70	+ 0.2	.....	56273 "
.....	1.0364	8.82	7.91	+ 0.3	.....	56274 "
.....	1.0342	7.72	7.70	+ 0.3	.....	56275 "

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.	
				Quantity.	Cents.	Manufacturer.	Furnisher.

## DISTRICT OF QUEBEC

1914.							
July 8	Suc de chaux . . .	2358	Eng. Fournier, St. Jérôme, P. Q.	3 bts.	135	Evan's Sons Lasher & Webb, Ltd.	
" 13	Lime Juice. . .	2374	Frank D. Hall, St. Agathe des Monts.	3 "	60	Holbrooks	
Aug. 5	" . . .	2379	J. D. Campbell, Lachute.	3 "	75	Nat. Drug & Chem. Co., Montreal.	
" 5	" . . .	2385	J. Christies, Lachute.	3 "	75	Rose & Co., Ltd., London, Eng.	
June 30	" . . .	2835	Gagnon, Quebec.	3 "	150		

## DISTRICT OF THREE RIVERS—

May 22	Lime Juice . . .	60912	J. A. Boisvert, Joliette.	3 bts.	75	Rose & Co., Ltd., London.	
" 22	" . . .	60928	Deschenes & Picard, Joliette.	3 "	35	T. A. Lytle Co., Ltd., Toronto.	

## DISTRICT OF EASTERN TOWNSHIPS—

June 10	Lime Juice . . .	2130	J. O. McDonald, lac Mégantic.	3 bts.	90	G. T. Sutton Sons & Co., London.	
" 10	" . . .	2131	Dr. W. O. Lemblay, Cookshire.	3 "	100	Lymans, Ltd., Montreal.	
" 22	" . . .	2132	R. Dubreuil, St. Césaire.	3 "	75	Simpson Bros. & Co., Ltd., Halifax.	
" 23	" . . .	2133	F. P. Williams, Knowlton.	3 "	145	Nat. Drug & Chem. Co. Agents, Ltd., Montreal.	
" 26	" . . .	2134	La Cie S. Bourgeois, Inc., St. Hyacinthe.	3 "	150	R. Fry & Co., Ltd., Montreal.	

## DISTRICT OF MONTREAL—

May 19	Lime Juice . . .	58381	K. Cambites, 156 St. Lawrence Blvd., Montreal.	3 bts.	75		Unknown . . . . .
" 19	" . . .	58382	Pelletier & Frere, 17 Chabouillez Square, Montreal.	3 "	165		Hudon & Orsali, Montreal.
" 20	" . . .	58383	A. Corbeil, 55 Mount Royal Ave. East, Montreal.	3 "	30		Unknown . . . . .
" 20	" . . .	38384	A. Bélanger, 119 Mount Royal Ave. East, Montreal.	3 "	30		E. Beauchamp, Montreal.
" 20	" . . .	58385	M. Kilkery, 284 Mount Royal Ave. East, Montreal.	3 "	90		Montreal Drug & Chem. Co., Montreal.

## DISTRICT OF VALLEYFIELD—

June 1	Lime Juice . . .	62355	P. T. McLaurin, Vankleek Hill.	3 bts.	30		
" 18	" . . .	62356	S. Auclair, Chambly Centre.	3 "	75		

## LIME JUICE.

Inspector's Report. (Is not an expression of Opinion).	Results of Analysis.				No. of Sample.	Remarks and Opinion of the Chief Analysis.
	Sp. Gr. of Juice.	Total solids.	Acidity as citric acid.	Rotation (2 dm.)		
N. CADIEUX AND J. E. AUDET, TEMPORARY INSPECTORS.						
		p. c.	p. c.			
.....	1 0368	9.39	8.26	- 0.4	2358	Genuine.
.....	1 0347	8.44	7.91	- 0.5	2374	"
.....	1 0309	8.15	7.14	- 0.3	2379	"
.....	1 0353	10.42	7.84	- 0.4	2385	"
.....	1 0317	9.70	7.63	0.3	2835	Benzoic acid.
Dr. V. P. LAVALLÉE, INSPECTOR.						
.....	1 0352	9.10	8.05	- 0.5	60912	Genuine.
.....	1 0238	5.95	5.04	- 0.3	60928	Below standard. Adulterated. Citric=1.96.
J. C. ROULEAU, INSPECTOR.						
.....	1 0297	9.44	7.98	- 0.5	2130	Genuine.
.....	1 0313	10.20	8.12	- 0.5	2131	Benzoic acid.
.....	1 0329	7.07	7.00	- 0.5	2132	Salicylic acid.
.....	1 0345	9.97	7.84	- 0.5	2123	Below standard in solids.
.....	1 1311	19.50	3.15	- 34.2	2134	Genuine.
.....						Sweetened with sugar. Below standard in citric acid=3.85
D. J. KEARNEY, INSPECTOR.						
Roses.....	1 0368	9.80	8.05	+ 0.4	58381	Genuine.
Montserrat.....	1 0369	10.08	8.05	- 0.4	58382	"
Kkovah.....	1 0302	7.27	7.00	- 0.5	58383	Salicylic acid.
Dalton's.....	1 0293	6.43	5.83	- 0.5	58384	Below standard in solids.
Sovereign.....	1 0302	7.30	6.44	- 0.5	58385	Below standard. Adulterated. Citric=1.17.
.....						Below standard, citric=0.56.
J. J. COSTIGAN, ACTING INSPECTOR.						
Rose Brand.....	1 0348	8.98	8.05	- 0.4	62355	Genuine.
Sovereign.....	1 0305	7.13	6.86	- 0.4	62356	Below standard. Citric=0.14.

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.	
				Quantity.	Cents.	Manufacturer.	Furnisher.

## DISTRICT OF VALLEYFIELD—

1914.							
June 19	Lime Juice...	62357	H. M. Davies, St. Lambert.	3 bots.	30		
" 19	"	62358	R. Boissy, St. Lambert.	3 "	105		

## DISTRICT OF OTTAWA—

June 2	Lime Juice ...	63421	E. C. Armand, Arnprior.	3 bots.	90	The T. A. Lytle Co., Ltd., Toronto.	Mfrs. ....
" 5	"	63422	A. S. Moreland, Bank St., Ottawa.	3 "	75	Evan's Sons, Lecher & Webb, London, Eng.	"
" 5	"	63423	"	3 "	75	Dalton Bros., Toronto.	"
" 6	"	63424	D. J. Gillies, Cornwall.	3 "	120	L. Rose & Co., Ltd., London, Eng.	"
" 8	"	63425	Thos. J. Ferguson, James St., Ottawa.	3 "	75	G. F. Sutton Sons & Co., London, Eng.	H. N. Bate & Sons, Ottawa.

## DISTRICT OF KINGSTON—

May 20	Lime Juice...	61526	Thompson Bros., Belleville.	3 bots.	30	Green, Toronto.	
" 20	"	61527	George Boyle, Belleville.	3 "	20		
" 20	"	61528	F. H. Brown, Port Hope.	3 "	75	L. Rose & Co., London.	
" 21	"	61529	J. E. Lillico, Peterboro.	3 "	75	Imperial Extract Co., Toronto.	
" 21	"	61530	W. J. Kent, Peterboro.	3 "	75	Nat. Drug Co., Toronto.	

## DISTRICT OF TORONTO—

May 26	Lime Fruit Juice.	63233	Imperial Extract Co., Matilda St., Toronto.	10 3 bots.	60	Vendors	
" 26	"	63234	Drug Trading Co., Ltd., 6 & 8 Ontario St., Toronto.	3 "	83	A. P. Tippitt, Montreal.	
" 26	"	63235	Dalton Bros., 11 Front St. East, Toronto.	3 "	75	Vendors	
" 26	"	63236	The T. A. Lytle Co., Ltd., Sterling Road, Toronto.	3 "	30	"	
" 26	"	63237	P. T. McMaster, 452 Roncesvalles St., Toronto.	2 "	50	Sutcliffe & Bing, Drug Trading ham, Ltd., Manchester, Eng.	Man. Co., Ltd., Toronto.

## DISTRICT OF HAMILTON—

June 3	Lime Juice...	62262	Dawson & Co., Brampton.	3 bots.	30	Dalton Bros., Toronto.	
" 6	"	62263	E. M. Spring, Galt.	3 "	30	Jas. Lumbers, Ltd., Toronto.	

LIME JUICE.

Inspector's Report. (Is not an expression of Opinion.)	Results of Analysis.				No. of Sample.	Remarks and Opinion of the Chief Analyst.
	Sp. gr. of Juice.	Total solids.	Acidity as citric acid.	Rotation (2 dm.)		

Concluded.

		p. c.	p. c.		
Rose .....	1.0346	8.14	7.84 - 0.3		62357 Genuine.
Montserrat.....	1.0337	9.10	8.05 - 0.5		62358 "

J. A. RICKEY, INSPECTOR.

"Sterling" Brand ...	1.0339	7.77	7.14 - 0.5	Benzoic acid.	63421	Below standard in solids.
"Olympia" Brand, qua- lity guaranteed.	1.0339	7.52	7.28 + 0.3		63422	" "
.....	1.0394	12.78	8.47 + 8.5		63423	Contains glucose. Otherwise genuine. May contain added citric acid.
.....	1.0345	8.25	8.05 - 0.3		63424	Genuine.
.....	1.0281	6.39	6.30 - 0.3		63425	Below standard. Citric=0.70

JAS. HOGAN, INSPECTOR.

.....	1.0455	10.39	1.96 - 10.8	Salicylic acid.	61526	Below standard. Adulterated. Citric=5.04. Contains su gar
Klovah.....	1.0303	7.06	5.88 - 0.3	"	61527	Below standard, citric=1.12 Adulterated.
.....	1.0359	9.61	8.12 - 0.3		61528	Genuine.
.....	1.0191	4.22	4.20 - 0.5		61529	Below standard. Adulterated. Citric=2.80.
.....	1.0302	7.53	7.07 - 0.0		61530	Below standard in solids.

H. J. DAGER, INSPECTOR.

"Yacht Club".....	1.0191	5.17	4.90 + 0.2		63233	Below standard. Citric=2.10. Adulterated.
Stowers Pure Lime Juice contains no alcohol.	1.0328	7.83	7.21 - 0.3		63234	Below standard in solids.
Dalton's West India Lime Juice.	1.0311	7.20	7.14 - 0.5		63235	" "
"Sterling" Brand ...	1.0300	6.98	6.30 - 0.3		63236	Below standard. Citric=0.70.
Klovah Brand.....	1.0260	6.13	5.81 - 0.5	Salicylic acid.	63237	Below standard. Citric=1.19. Adulterated.

H. J. DAGER, ACTING INSPECTOR.

Dalton's Lime Juice. ....	1.0387	8.98	6.23 - 3.8	Benzoic acid.	62202	Below standard. Citric=0.77. Contains sugar.
Rose's Lime Juice.....	1.0348	7.78	7.70 + 0.1		62263	Below standard in solids.

Date of Collection.	Nature of Sample.	No. of Sample.	Name and Address of Vender.	Cost.		Name and Address of Manufacturer or Furnisher as given by the Vendor.	
				Quantity.	Cents.	Manufacturer.	Furnisher.
DISTRICT OF HAMILTON—							
1914							
June 10	Lime Juice...	62264	E. B. Mealley, 1096 Barton St., East, Hamilton	3 bots.	75		Nat. Drug and Chem. Co., Ltd., Hamilton.
" 11	"	62265	W. A. Howell, King and Emerald Sts., Hamilton	3 "	110		Maclure & Langley, Toronto.
" 11	"	62266	R. D. Saul, 150 James St., North, Hamilton.	3 "	75		A. A. Adams, Hamilton.
DISTRICT OF WINDSOR—							
May 26	Lime Juice.	53675	J. A. Gibson, Petrolia...	3 bots.	75	Unknown.....	Unknown.....
" 26	"	53682	A. Scarsbrook, " "	3 "	75	Rose & Co., London, Eng.	
" 27	"	53684	Jas. Galbraith, Sarnia	3 "	120		T. Kenuy & Co., Sarnia.
" 27	"	53697	A. A. Hammon & Son, Sarnia.	3 "	30		Holbrook & Co., Toronto.
" 27	"	53692	W. C. Palmer, Sarnia....	3 "	75	T. A. Lytle, Toronto.	
DISTRICT OF MANITOBA—							
May 26	Lime Juice...	61131	Joseph Chadlad, 530 Notre Dame, Winnipeg.	3 bots.	75	The Blackwoods, Ltd., Winnipeg.	
" 26	"	61132	McNeill Bros., Sargent & Sherbrooke, Winnipeg.	3 "	75	Nat. Drug & Chem. Co., of Canada.	
June 8	"	61133	J. A. Mc Kerchar, Main St., Winnipeg.	3 "	105	G. F. Sutton Sons & Co., England.	
" 8	"	61134	Andrews Drug Store, Main & Logan, Winnipeg.	3 "	120	L. Rose & Co., London, Eng.	
" 9	"	61135	Walter Fee, Logan Ave., Winnipeg.	3 "	45	The Blackwoods, Ltd., Winnipeg.	
DISTRICT OF SASKATCHEWAN, EAST—							
May 30	Lime Juice...	63762	The Colonial, Regina.....	3 bots.	75	The T. A. Lytle Co. Ltd., Toronto	
" 30	"	63767	Reg. Grocery, Regina.....	3 "	40	L. Rose & Co., London, Eng.	
June 1	"	63770	E. A. Jolly, Regina.....	3 "	150	Evan's Sons, Lescher & Webb, London, Eng.	
" 1	"	63771	Colonial Grocery, Regina	3 "	105	White Star Mfg., Co., Winnipeg.	
" 1	"	63773	A. Duncan, Regina.....	3 "	75	Martin Bole & Wynne Co., Winnipeg.	



LIME JUICE.

Inspector's Report. (Is not an expression of Opinion.)	Results of Analysis.					No. of Samples.	Remarks and Opinion of the Chief Analyst.
	Sp. gr. of Juice.	Total solids.	Acidity as citric acid.	Rotation (2 dm.)	Found.		
<i>Concluded.</i>							
Olympia Lime Juice	1.0338	7.49	7.42	-0.5		62264	Below Standard in Solids.
K Koval. " "	1.0271	6.68	6.37	-0.4	Salicylic acid.	62265	Below Standard. Citric=0.53.
Stones " "	1.0359	8.18	7.28	-0.2		62266	Genuine.

JNO. TALBOT, INSPECTOR.

Olympia Lime Juice	1.0303	7.10	7.00	-0.2		53675	Below Standard in Solids.
Rose's West India Lime Juice.	1.0350	9.05	8.05	-0.5		53682	Genuine.
Moutserrat Guaranteed pure.	1.0367	9.77	8.12	-0.3		53684	"
Roses Lime Juice.	1.0348	8.01	7.91	-0.5		53687	"
"Sterling" Brand.	1.0307	7.12	7.07	-0.3	Salicylic acid.	53692	Below Standard in Solids.

A. C. LARIVIERE, INSPECTOR.

Blackwoods Lime Fruit Juice.	1.0355	8.96	7.56	-1.6	Salicylic acid.	61131	Exceptional in rotation—Other-wise genuine; Trace Sugar added.
Sovereign	1.0301	7.36	6.86	-0.3		61132	Below Standard Citric=0.14.
" "	1.0273	6.63	5.88	-0.5	Salicylic acid.	61133	Below Standard, Adulterated.
Rose's Lime Juice.	1.0358	7.99	7.89	0.5		61134	Citric=1.12. Genuine.
Blackwoods Lime Fruit Juice.	1.0357	8.39	7.62	-1.6	Salicylic acid.	61135	Exceptional in rotation, other-wise genuine; a trace sugar.

JNO. O. SCOTT, INSPECTOR.

" "	1.0305	6.94	6.30	0.0		63762	Below Standard, Citric=0.70.
" "	1.0346	8.10	8.05	+0.2		63767	Genuine.
" "	1.0348	9.43	8.12	-0.2		63770	"
" "	1.0322	7.91	7.35	-0.5	Salicylic acid.	63771	"
" "	1.0286	6.85	6.30	-0.4		63773	Below Standard. Citric=0.70

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.	
				Quantity.	Cents.	Manufacturer.	Furnisher.

## DISTRICT OF SASKATCHEWAN WEST—

1914.							
June 9	Lime Juice...	64005	H. S. Elvin, Weyburn, Sask.	1 pint.	25	Bole Drug Co., Winnipeg.	
" 10	" ..	64019	Kent & Brown Co., Ltd, Moosejaw, Sask.	1 "	25	Dalton Bros., Toronto.	
" 11	" ..	64022	Moosejaw Drug & Stationery Co., Moosejaw, Sask.	1 "	40	L. Rose & Co., Ltd., London, Eng.	
" 11	" ..	64025	Paragon Store, Moosejaw, Sask.	1 bot.	25	White Star Mfg. Co., Winnipeg.	
" 12	" ..	64033	E. L. Colling, Moosejaw, Sask.	1 "	50		Nat. Drug and Chem. Co.

## DISTRICT OF ALBERTA—

June 16	Lime Juice...	51986	J H. Morris & Co., Edmonton.	3 bots.	135		Evan's Sons, Lecher & Webb, Ltd., London
" 16	" ..	51987	Hallier & Aldridge, Edmonton.	3 "	120	L. Rose & Co., Ltd., London, Eng.	
" 19	" ..	51988	Hudsons Bay Co., Calgary.	3 "	105	" ..	Holbrook & Co., Toronto.
" 20	" ..	51989	C. H. Barry, Riverside, Calgary.	3 "	105	Lyman Bros. & Co., Ltd., Toronto.	
" 20	" ..	51990	S. G. Freeze, Calgary.....	3 "	120	Imperial Extract Co., Toronto.	

## DISTRICT OF ROCKY MOUNTAINS—

June 9	Lime Juice...	61626	Byers, Giegerich Co., Kusto, B.C.	Green 3 bots.	150	The Montserrat Co., Montserrat.	
" 18	" ..	61628	L. C. Masson, Revelstoke, B.C.	3 "	120	W. H. Malkin & Co., Vancouver, B.C.	
" 18	" ..	61635	C. B. Hume & Co., Revelstoke, B.C.	3 "	105	L. Rose & Co., London, Eng.	
" 18	" ..	61642	G. W. Bell, Revelstoke, B.C.	3 "	135	Imperial Extract Co., Toronto.	
" 18	" ..	61645	A. Hobson, Revelstoke, B.C.	3 "	135	Kelly, Douglas & Co., Vancouver, B.C.	

## LIME JUICE.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.				No. of Sample.	Remarks and Opinion of the Chief Analyst.
	Sp. gr. of Juice.	Total solids.	Acidity as citric acid.	Rotation (2 dm.)		

## L. H. HALL, INSPECTOR.

		p.c.	p.c.			
.....	1.0298	12.49	5.04	- 26.0	Salicylic acid.	64005 Contains sugar. Below standard. Citric=1.96.
.....	1.0544	10.99	7.42	- 5.2	Benzic acid and sugar..	64019 Contains sugar. Otherwise gen- uine.
.....	1.0323	7.84	7.35	- 0.2	.....	64022 Below standard in solids.
.....	1.0322	7.19	7.14	- 0.2	Salicylic acid.	64025 Below standard in solids.
.....	1.0348	8.25	8.05	- 0.2	.....	64033 Genuine.

## A. W. R. MARKLEY, INSPECTOR.

Montserrat .....	1.0363	9.20	8.05	- 0.5	.....	51986 Genuine.
.....	1.0348	8.05	7.77	- 0.3	.....	51987 "
.....	1.1198	27.98	3.08	- 34.0	Salicylic acid.	51988 Contains sugar. Below stand- ard. Citric=3.32.
.....	1.0339	7.29	7.14	- 0.4	.....	51989 Below standard in solids.
.....	1.0261	7.22	6.86	+ 0.5	.....	51990 Below standard. Citric=0.14.

## THOS. PARKER, INSPECTOR.

Montserrat .....	1.0352	8.08	7.98	+ 0.2	.....	61626 Genuine.
.....	1.0352	8.48	8.05	- 0.3	Salicylic acid.	61628 "
.....	1.0338	8.14	7.56	- 0.3	.....	61635 "
Yacht Club .....	1.0300	8.03	7.28	- 0.1	.....	61642 "
Nabob .....	1.0353	7.49	7.14	+ 0.2	.....	61645 Below standard in solids.

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.	
				Quantity.	Cents.	Manufacturer.	Furnisher.

## DISTRICT OF VANCOUVER

1914							
June	1	Line Juice...	55033 Vancouver Drug Co., 405 Hastings street West, Vancouver, B.C.	3	bots.	75	L. Rose & Co., London, Eng.
"	1	"	55034 The Edgett Stores, Ltd., 111 Hastings St. West, Vancouver, B.C.	3	"	75	Alex. Riddle & Co., Ltd., London, Eng.
"	2	"	55035 Hudsons Bay Co., Vancouver, B.C.	3	"	120	Evan's Sons, Lecher & Webb, London, Eng.
"	4	"	55036 T. A. Muir & Co., 441 Columbia street, New Westminster, B.C.	3	"	40	Nat. Drug and Chem. Co. of Canada.
"	4	"	55037 D. S. Curtis & Co., 639 Columbia street, New Westminster, B.C.	3	"	100	Unknown

## DISTRICT OF VICTORIA

May	21	Line Juice...	61929 L. C. Adams Co., Ltd., Johnston and Douglas streets, Victoria, B.C.	3	bots.	75	W. A. Jameson Coffee Co., Victoria, B.C.
"	21	"	61931 Acton Bros., 1317 Douglas street, Victoria, B.C.	3	"	45	W. A. Ross & Bros., Belfast.
"	21	"	61933 Windsor Grocery Co., Government street, Victoria, B.C.	3	"	150	Wm. Sanderson & Son, Leath.
"	21	"	61937 Copas & Young, 633 Fort street, Victoria, B.C.	3	"	60	Pure Fruit Packing Co., Vancouver, B.C.
"	22	"	61939 H. O. Kirkham & Co., Ltd., 741 Fort street, Victoria, B.C.	2	"	105	Alex. Riddle & Co., London, Eng.

## LIME JUICE.

Inspector's Report. (Is not an expression of opinion.)	Results of Analysis.					No. of Sample.	Remarks and Opinion of the Chief Analyst.
	Sp. gr. of Juice.	Total solids.	Acidity as citric acid.	Rotation (2 dm.)	Found.		

## E. J. MORGAN, INSPECTOR.

		p.c.	p.c.				
.....	1 0357	8.44	7.77	- 0.3	.....	55033	Genuine.
Stowers' Pure Lime Juice	1 0307	7.51	6.93	- 0.2	.....	55034	Below standard. Citric=0.07
Montserrat. Guaranteed pure.	1 0346	8.90	7.84	+ 0.3	.....	55035	Genuine.
Sovereign .....	1 0207	6.40	4.55	- 0.3	.....	55036	Below standard. Adulterated. Citric=2.45. X
Bottled by Vendor and guaranteed pure.	1 0303	7.18	6.72	- 0.4	.....	55037	Below standard. Citric=0.28.

## D. O'SULLIVAN, INSPECTOR.

"Jamesons" Limeade ..	1 0173	4.76	4.62	0.0	Salicylic acid.	61929	Below standard. Not sold as Lime Juice. Citric=2.38.
"Great Auk's Head" Brand.	1 0338	8.25	7.56	- 0.2	" ..	61931	Genuine.
Lime Juice Cordial.....	1 1411	31.36	0.91	-42.0	" ..	61933	Sugar present. Below standard. Citric=6.09.
"Pure Fruit" Lime Juice	1 0187	3.59	3.51	- 0.2	" ..	61937	Below standard. Adulterated. Citric=3.49. X
.....	1 0323	7.10	7.00	- 0.4	.....	61939	Below standard in solids.

28/10/14 notified  
in cases marked  
thus X

