

**CIHM  
Microfiche  
Series  
(Monographs)**

**ICMH  
Collection de  
microfiches  
(monographies)**



**Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques**

**© 1998**

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming are checked below.

- Coloured covers / Couverture de couleur
- Covers damaged / Couverture endommagée
- Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- Cover title missing / Le titre de couverture manque
- Coloured maps / Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- Bound with other material / Relié avec d'autres documents
- Only edition available / Seule édition disponible
- Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.
- Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from filming / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- Additional comments / Commentaires supplémentaires:

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured pages / Pages de couleur
- Pages damaged / Pages endommagées
- Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed / Pages décolorées, tachetées ou piquées
- Pages detached / Pages détachées
- Showthrough / Transparence
- Quality of print varies / Qualité inégale de l'impression
- Includes supplementary material / Comprend du matériel supplémentaire
- Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image / Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.
- Opposing pages with varying colouration or discolourations are filmed twice to ensure the best possible image / Les pages s'opposant ayant des colorations variables ou des décolorations sont filmées deux fois afin d'obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below / Ce document est filmé au taux de réduction indiqué ci-dessous.

10x		14x		18x		22x		26x		30x		
		12x		16x		20x		24x		28x		32x

The copy filmed here has been reproduced thanks to the generosity of:

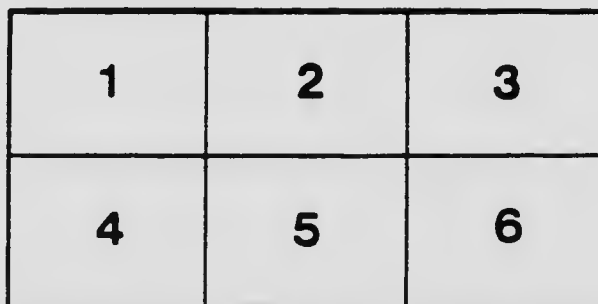
National Library of Canada

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol  $\rightarrow$  (meaning "CONTINUED"), or the symbol  $\nabla$  (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

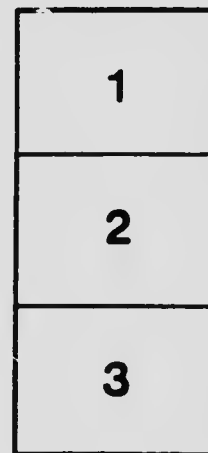
Bibliothèque nationale du Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole  $\rightarrow$  signifie "A SUIVRE", le symbole  $\nabla$  signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.



---

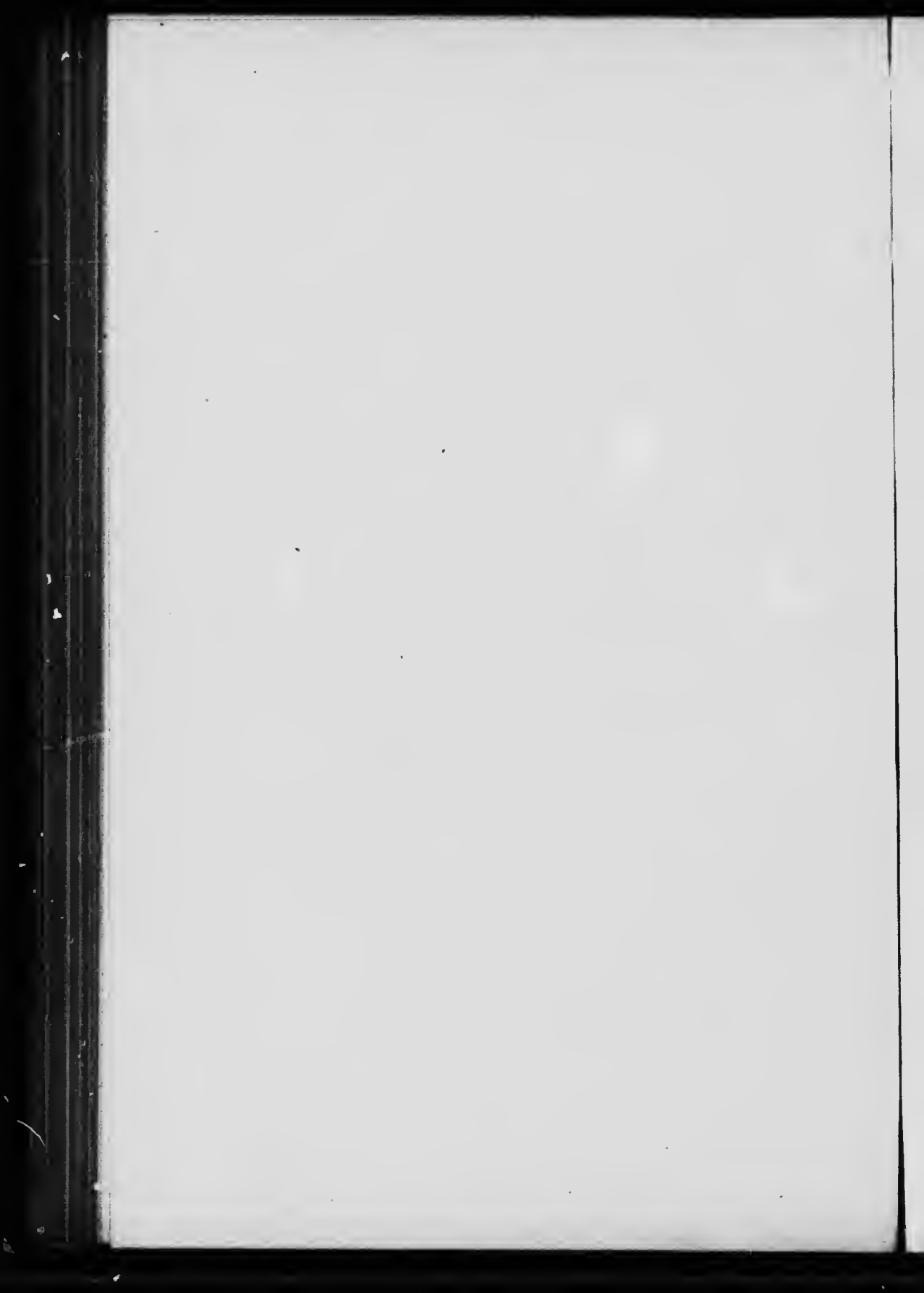
LABORATORY  
OF THE  
INLAND REVENUE DEPARTMENT

—  
BULLETIN No. 95  
—

GROUND SPICES

*(Reprint—See Note pages 4 and 10)*

---



W. J. GERALD, Esq.,

OTTAWA, February 19, 1904.

Deputy Minister of Inland Revenue.

SIR,—I beg to submit herewith a series of tabulated statements showing the results obtained in this laboratory in examining a number of samples of ground spices, collected in accordance with your instructions of August 11 last. They were collected in the months of August and September, 1903, and were obtained of different sorts, in various districts and in the numbers given in the following statement.—

	Black Pepper.	White Pepper.	Red Pepper.	All Spice.	Mixed Spices.	Cassia and Cinnamon.	Cloves.	Ginger.
Nova Scotia .....	6	4	0	3	3	0	2	2
P. E. Island .....	6	0	0	2	1	0	1	0
New Brunswick.....	6	1	0	3	0	3	2	4
Province of Quebec.....	10	8	0	2	0	2	1	0
Montreal district.....	8	11	0	0	0	0	2	0
Kingston district.....	4	10	0	0	0	3	1	0
Toronto district.....	8	9	0	2	0	2	2	1
London district.....	8	3	0	0	0	0	2	2
Manitoba district.....	5	5	3	1	0	1	2	0
Calgary district.....	4	2	0	0	1	0	0	1
British Columbia.....	11	1	0	3	0	0	0	0
	76	54	3	16	5	11	13	10

Based on the opinions of the analysts which are stated in the tables, the following recapitulation shows the extent to which adulteration prevailed among the 188 samples just enumerated:—

	Genuine.	Doubtful.	Adulterated.	Total.
Black pepper.....	33	1	42	76
White pepper.....	23	1	30	54
Red pepper.....	0	1	2	3
All spice.....	13	2	1	16
Mixed spices.....	3	0	2	5
Cassia or Cinnamon.....	1	0	10	11
Cloves.....	9	2	2	13
Ginger.....	6	0	4	10
	88	7	93	188

From the foregoing it appears that only 46·8 per cent of these samples of ground spices were genuine, the remainder being doubtful or adulterated.

A memorandum by Mr. McGill, explaining the method adopted by him in examining the ground ginger is attached to this report.

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

THOMAS MACFARLANE,  
Chief Analyst.

## INSPECTION OF BLACK PEPPER—

Date of Collection	Number of Sample	Name and Address of Vendor.	Quantity.	Cwt.	Name and Address of Manufacturer or Furnisher.	RESULTS	
						Water Soluble.	Soluble in Acid after Water.
						p. c.	p. c.
Sept. 14..	20356	W. C. Anderson, Halifax, N.S.	3 pkgs..	0 30	J. P. Mott, Dartmouth, N.S.	2 78	1 92
" 14..	20357	R. Urquhart & Son, Halifax, N.S.	3 " ..	0 25	Schwartz & Sons, Dartmouth	1 68	3 12
" 15..	20361	J. L. Archibald & Son, Halifax, N.S.	3 " ..	0 25	Brown & Webb, Halifax..	2 36	2 58
" 18..	20371	H. C. Barnaby & Sons, Bridgewater.	3 " ..	0 21	J. P. Mott & Co., Halifax..	2 06	2 24
" 18..	20373	Freeman Bros., Bridgewater.	3 " ..	0 21	R. B. Seaton, Halifax.....	1 96	2 70
" 23..	20389	E. W. Crease, Halifax.....	3 " ..	0 21	Brown & Webb, Halifax....	2 40	2 52
" 19..	4348	W. A. Poole, Montague, P.E.I.	3 lb... 3	0 24	J. P. Mott & Co., Halifax..	2 10	1 44
" 19..	4349	J. A. McDonald, Cardigan, P.E.I.	3 " ..	0 21	Simpson & Co., Halifax... 2	2 00	1 38
" 19..	4351	H. F. Feehan, Mount Stewart, P.E.I.	3 " ..	0 21	Dearborn & Co., St. John, N.B.	1 68	3 00
" 19..	4363	W. C. Strong, Sunnyside, P.E.I.	3 " ..	0 14	Severts, Halifax.....	1 92	2 80
" 27..	4368	A. L. McDonald, Souris, P.E.I.	3 " ..	0 25	Could not tell where purchased.	2 28	2 82
" 27..	4369	Stevens Bros., Souris, P.E.I.	3 " ..	0 16	Simpson Bros., Halifax....	2 88	2 26
" 19..	17926	Baird & Peters, Ward St., St. John, N.B.	3 " ..	0 24	Berry imported by vendors. Ground and packed in Halifax.	2 02	1 60
" 26..	*17945	John O'Neill, Moncton, N.B.	3 " ..	0 30	F. H. Harris & Co., Moncton, N.B.	2 30	2 22
" 28..	*17950	Geo. Stables, Newcastle, N.B.	3 " ..	0 25	.....	1 18	3 64
" 28..	17946	W. G. Bell, Moncton, N.B..	3 " ..	0 30	S. H. & A. S. Ewing, Montreal.	1 58	1 70
" 8..	17958	Murchie Bros., Charlotte, N.B.	3 " ..	0 25	A. J. Leed, St. Stephen, N.B.	2 12	1 90
" 12..	17973	H. C. Jewett, Fredericton, N.B.	3 pkgs..	0 30	Todhunter, Mitchell & Co., Toronto.	2 30	2 06
Aug. 28..	23607	Ringuet et fils, Rimouski....	1 lb... 1	0 20	Dearborn & Co., St. John, N.B.	2 28	1 78
" 28..	23608	Joseph Parent, Rimouski....	1 " ..	0 22	Dr. E. Morin, Quebec... ..	1 78	2 78
" 29..	23609	M. Bernier, Rivière du Loup.	1 " ..	0 25	N. Rioux, Quebec.....	2 54	2 78
" 31..	23614	J. A. Jarvis, Rivière du Loup.	3 " ..	0 15	Hudon, Hebert et Cie, Montreal.	2 20	2 20
Sept. 1..	23619	A. G. Lambert, Lévis.....	1 " ..	0 24	Herron, Montreal... ..	0 80	3 18
" 3..	23630	Blais & Huard, Thetford....	1 " ..	0 30	Laporte, Martin & Co., Montreal.	0 96	4 78
" 3..	23633	N. P. Tanguay, Weedon... ..	1 " ..	0 25	.....	1 40	4 48
" 5..	23638	Woodman & McKee, Coaticook.	1 " ..	0 30	L. Chaput et fils, Montreal.	1 80	3 26
" 16..	23643	G. H. Hill, Lachute.....	1 " ..	0 30	Forbes Bros., Montreal....	0 90	8 30

\* Samples 17945 and 17950. In the original bulletin the name of Messrs. S. H. and A. S. Ewing of

## Tabulated Statement of Results.

OF ANALYSIS.				Microscopical Examination, &c.	Analyst.	Observations.
Ash.		Loss at 98° C., Moisture, &c.	Petrolin Ether Ex- tract.			
Acid Insoluble— Sand.	Total.					
p. c.	p. c.	p. c.	p. c.			
0.72	5.42	10.34	5.74	Pepper tissues only, with some chips and dirt.	Miss E. Davidson	Unadulterated.
2.00	6.80	10.72	6.56	A little charcoal, many hairs and a foreign tissue unidentified.	"	Doubtful.
1.06	6.00	10.48	6.08	Pepper tissues only; coarsely ground....	"	Unadulterated.
0.58	4.88	10.72	7.36	Pepper tissues only.	"	Genuine.
1.88	6.54	10.52	7.52	Much maize and wheat starch and many stone cells.	"	Adulterated.
1.54	6.46	10.48	7.00	Pepper tissues only; coarse and dirty....	"	Unadulterated.
0.26	3.80	10.21	6.84	Apparently pure; contains some fibrous tissues.	"	"
0.18	3.56	8.70	7.15	A little charcoal or roasted shell, otherwise pure.	"	"
2.54	7.22	8.60	7.10	Much wheat starch, fibrous tissue, mustard husks and white stone cells.	"	Adulterated.
1.38	6.10	8.85	7.55	Pepper tissues only	"	Genuine.
1.18	6.28	8.70	7.55	"	"	"
0.84	5.98	8.30	7.35	"	"	"
0.28	3.90	8.40	7.55	"	"	"
0.74	5.26	7.70	7.60	"	"	"
8.60	13.49	8.70	8.10	Some buckwheat and wheat starch.	"	Slightly adulterated.
0.44	3.72	7.75	7.75	Contains maize and other foreign starch, many stone cells, some charcoal and fibrous tissues, also a substance resembling turmeric.	"	Adulterated, being composed of dirt and not much pepper.
0.20	4.22	7.15	0.75	Pepper tissues only	"	Genuine.
0.22	4.58	7.95	7.40	Some wheat and rice starch present.	"	Adulterated.
0.18	4.21	7.30	7.15	Pepper tissues only	"	Genuine.
5.24	9.80	6.40	8.70	Wheat (and large amount) flour present; musty and caked.	"	Adulterated.
1.19	6.42	8.50	2.65	Wheat and rice (or buckwheat) flour present.	"	"
1.42	5.82	8.15	5.45	Pepper tissues with a few hairs....	"	Genuine.
3.84	7.85	7.90	5.30	Pepper tissues only	"	"
5.68	11.42	9.50	9.40	Contains much wheat starch, turmeric, much fibrous tissue, charcoal, hairs, &c.	"	Adulterated.
7.16	13.04	9.15	3.65	Contains but little pepper but much fibrous tissue, hairs, dirt, &c., also rice starch, mustard husk and turmeric.	"	"
3.70	8.76	9.20	3.50	Fibrous tissue, hairs and dirt present, also some roasted shells or charcoal.	"	"
6.34	15.54	10.10	3.20	Genuine, but contains an excess of sand.	A. Lemoine....	"
		10.00	3.45	Pepper tissue and sweepings	"	"
		9.06	5.75	"	"	"
		8.95	5.90	"	"	"

Montreal was in error, given as that of the manufacturer or furnisher.



## INSPECTION OF BLACK PEPPER—

Date of Collection	Number of Sample.	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher.	RESULTS	
						Water Soluble.	Sol. in Acid after water.
				\$ cts.		p. c.	p. c.
Sept. 17..	23648	C. E. Lafontaine, St. Jerome.	1 lb...	0 20	J. Duffy, Montreal.	1 10	4 06
Aug. 24..	21363	Black & White, 2084 Notre Dame St., Montreal.	1 " ..	0 25	Ground for the vendor by R. Herron & Co.	3 60	3 10
" 25..	21385	J. Normandeau, 2208 Notre Dame St.	.....	.....	Not given.....	1 68	3 06
" 25..	21387	A. Brisbois, 2358 Notre Dame St.	.....	.....	D. C. Brosseau & Co.....	1 24	3 08
" 25..	21391	G. Dubord, 130 Island St., Montreal.	1 lb...	0 20	R. Herron & Co., Montreal.	1 28	2 02
Sept. 11..	21393	G. L. E. Guimond, Beauharnois, Que.	1 " ..	0 25	Hudon, Hubert & Co., Montreal.	1 10	5 00
" 11..	21395	Omer Marchand, Beauharnois	1 " ..	0 20	L. Chaput, Fils & Co.....	0 66	1 42
" 16..	21398	A. Allard, Lachine. ....	1 " ..	0 25	Laporte, Martin & Co., Montreal.	1 20	4 88
" 16..	21499	H. T. Barre, 2 St. Catherine St., Maisonneuve.	1 " ..	0 40	Not known.....	0 50	2 08
Aug. 26..	21403	J. M. Moag, Smith's Falls, Ont.	1 " ..	0 25	Pure Gold Co .....	2 12	1 68
" 27..	21413	C. Whitney, Prescott, Ont....	1 " ..	0 25	Hamilton Coffee and Spice Co.	2 40	1 88
" 27..	21407	Cameron & Soper, Brockville, Ont.	1 " ..	0 25	C. H. Cochrane & Co., Ottawa.	2 22	2 30
" 27..	21411	Jas. McDougall, Brockville..	1 " ..	0 25	Not given .....	0 94	1 31
Sept. 2..	23222	W. J. Hobson, 29 King E., Hamilton.	1 " ..	0 40	.....	2 06	2 78
" 2..	23224	M. Cummings, 302 James St.	1 " ..	0 25	.....	3 22	2 50
" 3..	23228	T. J. Medlands, 228 Queen W., Toronto.	1 " ..	0 25	.....	1 12	1 94
" 3..	23230	Frank Lyons, 622 Queen W., Toronto.	1 " ..	0 30	Toronto Coffee and Spice Co.	1 06	2 06
" 4..	23232	John Irvine, 552 Queen W....	1 " ..	0 30	Todhunter & Mitchell .	1 48	1 86
" 5..	23237	Hartman & Co., Brantford ..	1 " ..	0 20	Not given .....	1 72	1 82
" 5..	23239	T. B. Paisley, 182 Queen E., Toronto, Ont.	1 " ..	0 25	Humphrey, Toronto, Ont..	0 86	1 76
Aug. 22..	23256	C. R. Storey, 252 Queen E., Toronto.	1 " ..	0 20	Not given .....	2 92	3 16
" 24..	22118	B. B. Gunn, Seaforth, Ont ..	1 " ..	0 30	Todhunter & Mitchell, Toronto.	2 80	1 42
" 25..	22125	John & Jas. H. Kerr, Wingham.	1 " ..	0 30	Gorham & Eckhart, London, Ont.	1 36	2 72
" 26..	22131	John W. McIntyre, Walkerton, Ont.	1 " ..	0 30	Todhunter & Mitchell, Toronto.	2 20	2 08
" 26..	22135	T. H. Ellis & Co., Mount Forest.	1 " ..	0 25	Canada Spice and Grocers Co., London, Ont.	2 56	1 84
" 31..	22138	Setlers' Bros., Palmerston, Ont.	1 " ..	0 30	Canada Spice and Grocers Co., London, Ont.	3 38	2 28
Sept. 1..	22140	Beck & Schell, Berlin.....	½ " ..	0 13	Dunn & Co., Hamilton ....	2 32	1 92
" 1..	22145	Geo. Hasenflug, Waterloo....	½ " ..	0 13	Grocers Wholesale Co., Hamilton.	1 64	1 76

Tabulated Statement of Results.

OF ANALYSIS.				Microscopical Observations.	Analyst.	Observations.
Ash.		Loss at 70° C.— Moisture, &c.	Petric Ether Ex- tract.			
Acid Insoluble Sand.	Total.					
p. c.	p. c.	p. c.	p. c.			
0.50	11.66	10.25	0.88	Contains wheat starch, excess of stone cells and sweepings.	Alph. Lemoine.	Adulterated.
2.70	9.40	7.00	0.50			
3.16	7.90	7.00	0.70	Foreign starch, maize, excess of long stone cells and dust.	"	"
3.86	8.18	7.30	3.00	Wheat flour; black unbleachable substance, probably charcoal, and excess of long stone cells.	"	"
		6.90	3.50	Pepper tissue and sweepings.	"	"
8.26	11.56	6.15	3.90	Wheat starch, roasted shells or charcoal and pepper sweepings.	"	"
7.92	14.02	6.10	3.80	Long stone cells in excess and pepper sweepings.	"	"
2.44	4.52	6.45	3.35	Rice and maize starch and charcoal. Very little pepper tissue.	"	"
10.12	10.20	6.70	3.40	Contains excess of pepper sweepings.	"	"
2.90	5.48	6.80	3.60	Not much pepper; long stone cells in excess.	A. Lemoine	Grossly adulterated.
0.30	4.10	7.70	0.50		"	Genuine.
0.22	4.50	8.35	7.35		"	"
0.84	5.36	8.25	7.75		"	"
0.94	3.22	8.80	6.80	Long stone cells in excess, probably from coconut shells.	"	Adulterated.
0.48	5.32	8.70	6.65		"	Genuine.
0.62	6.34	7.90	7.10		"	"
0.78	3.84	8.50	6.25	Wheat starch, roasted shells or charcoal.	Alph. Lemoine.	Adulterated.
1.04	4.16	8.35	6.00	Wheat and rice starch, Cayenne pepper; many stone cells, probably coconut shell.	Miss E. Davidson	"
0.68	4.02	7.00	2.65	Coconut shell.	"	"
0.16	3.70	6.10	3.90	Buckwheat (or rice) starch, a little wheat starch; turmeric; very many stone cells.	"	"
1.04	3.66	5.90	3.60	Stone cells and other foreign matter.	A. McGill	Adulterated.
0.52	6.60	5.60	4.40	Wheat starch.	"	*Alcohol extract. Adulterated.
0.14	4.36	7.92	*5.48	Pepper tissues only.	Miss E. Davidson	Genuine.
1.92	6.00	7.85	3.85	Some stems and a little charcoal; otherwise genuine, although dirty.	"	"
0.34	4.62	7.75	4.45	Pepper tissues only.	"	"
0.50	4.90	9.50	7.00	Some hairs and fibrous tissue, a very little wheat starch.	"	Adulterated.
0.62	6.28	8.95	4.85	Hairs and spiral vessels; a little wheat starch.	"	"
0.68	4.92	8.90	4.95	Much wheat flour; long stone cells (coconut?)	"	"
0.40	3.80	5.30	7.90	Some wheat flour, hairs and much fibrous tissue; many stone cells and foreign tissue unidentified.	"	"
		5.50	7.60			
		8.45	6.75			
		8.50	6.85			
		7.75	6.45			
		7.80	6.60			
		8.20	4.25			
		8.10	4.15			
		8.25	3.60			
		8.25	3.75			

## INSPECTION OF BLACK PEPPER—

Date of Collection.	Number of Sample.	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher.	RESULTS	
						Water Soluble.	Soluble in Acid after Water.
				\$ cts.		p. c.	p. c.
Aug. 19..	22148	John Sloan, Galt. ....	½ "	0 15	Todhunter & Mitchell, Toronto.	2.94	1.68
" 20..	17477	A. E. Key, Minnedosa, Man.	½ "	0 15	.....	1.76	3.20
" 21..	17483	Galloway Bros., Gladstone, Man.	½ "	0 15	.....	3.52	1.90
" 21..	17489	C. J. McClocklin, Carberry..	½ "	0 20	.....	1.74	2.04
" 21..	17494	B. Meek, Virden, Man ...	½ "	0 15	.....	2.52	2.22
" 21..	17498	S. J. Staples, Carman, Man..	½ "	0 15	.....	1.76	2.08
Sept. 8..	21744	Philips Bros., Red Deer, Alta.	½ lb..	0 15	Not known.....	1.40	4.60
" 11..	21755	Douglass Bros., Strathcona..	3 tins..	0 30	The Dyson Co., Winnipeg..	1.08	2.96
" 11..	21757	Maclaren & Co., Strathcona.	½ lb..	0 20	" " ..	0.94	3.28
" 15..	21760	Chesney & Hicks, Calgary...	3 tins..	0 45	Great Western Spice Mills, Winnipeg.	0.98	6.02
" 25..	23558	Bear & Co., Vancouver.....	3 cans..	0 30	R. Herron & Co., Montreal.	1.32	3.30
" 25..	23560	Clarke & Rogerson, Vancouver.	3 " ..	0 30	Not known .....	1.12	4.32
" 25..	23563	Labelle & Co., Vancouver...	3 " ..	0 30	Stember & Earle, Victoria..	1.94	1.62
" 2..	23572	James Young, Nanaimo.....	3 bots..	0 40	J. A. Folger & Co., San Francisco.	2.06	1.58
" 2..	23575	James Hurst, Nanaimo.....	3 cans..	0 40	Oriental Mills, Vancouver..	1.22	1.12
" 2..	23576	A. R. Johnston & Co., Nanaimo.	3 " ..	0 30	H. G. Dunn & Co., Hamilton, Ont.	1.88	2.58
" 2..	23577	" " ..	3 " ..	0 30	A. Schilling & Co., San Francisco.	2.44	1.60
" 2..	23578	Geo. Bevilockway, Nanaimo.	5 " ..	0 40	F. F. Dalley & Co., Hamilton, Ont.	1.46	1.78
" 4..	23586	W. E. Morrison, Ladysmith.	3 " ..	0 30	Kelly, Douglas & Co., Vancouver.	0.98	0.88
" 4..	23589	A. J. Sinclair. ....	3 " ..	0 30	W. H. Walker & Co., Vancouver.	1.00	1.08
" 6..	23590	T. S. Annandale, New Westminster.	3 pkgs..	0 30	Hamilton Coffee and Spice Co., Hamilton.	2.94	1.84

## Tabulated Statement of Results—Continued.

OF ANALYSIS.				Microscopical Examination, &c.	Analyst.	Observations.
Ash.		Loss at 95° C.— Moisture, &c.	Petrolie Ether Ex- tract.			
Acid Insoluble— Sand.	Total.					
p. c.	p. c.	p. c.	p. c.			
0.28	4.90	8.20	7.50	.....	A. Lemoine	Genuine.
		8.05	7.70	.....		
3.22	8.18	10.50	5.05	Wheat starch and charcoal or roasted cells	"	Adulterated.
		10.60	5.35	.....		
0.34	5.76	10.10	5.35	.....	"	Genuine.
		9.90	5.70	.....		
0.86	4.58	9.75	7.25	.....	"	"
		9.65	7.35	.....		
0.36	5.10	11.10	8.50	.....	"	"
		11.25	8.30	.....		
0.72	4.56	12.65	6.35	.....	"	"
		12.35	6.00	.....		
6.80	12.80	9.27	3.85	Pepper tissue, sweepings and sand	A. Lemoine	Adulterated.
		8.90	4.20	.....		
4.56	8.60	7.65	3.85	Some wheat starch, pepper tissues, sweep-	"	"
		7.40	3.75	ings and sand.		
5.00	9.22	10.05	3.95	Wheat starch, long stone cells and sand.	"	"
		10.00	3.75	.....		
5.08	12.08	6.20	2.70	Wheat flour, charcoal or roasted shells, and	"	" (sold
		6.20	2.70	excess of sand.		as compound).
3.70	8.32	10.15	4.20	Wheat flour, pepper tissue, a little char-	"	Adulterated.
		10.20	4.40	coal or roasted shells.		
5.06	10.50	8.50	1.75	Wheat starch, long stone cells, and roasted	"	"
		8.35	1.70	shells or charcoal.		
0.22	3.78	7.75	5.75	Wheat flour.....	"	"
		7.40	5.90	.....		
0.34	3.98	10.50	7.10	Pepper tissue only.....	"	Genuine.
		10.30	7.45	.....		
0.78	3.12	8.35	4.15	".....	"	"
		8.40	4.00	.....		
2.76	7.22	8.15	6.30	Wheat flour.....	"	Adulterated.
		8.00	6.55	.....		
0.20	4.24	7.65	7.05	Pepper tissue only.....		Genuine.
		8.00	6.80	.....		
0.20	3.44	8.00	3.50	Wheat flour, and charcoal or roasted shells	A. Lemoine	Adulterated.
		7.75	3.50	.....		
0.90	2.76	8.60	4.60	Pepper tissue only.....	Miss E. Davidson	Genuine.
		8.40	4.60	.....		
.68	2.76	9.85	4.40	".....	"	"
		9.65	4.60	.....		
0.18	4.96	6.35	6.15	".....	"	"
		6.35	6.25	.....		

## INSPECTION OF WHITE PEPPER—

Date of Collection	Number of Samples	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher.	Alcohol Extraction
				\$ cts.		p. c.
Sept. 14	20355	W. C. Anderson, Halifax, N.S.	3 pkgs.	0 15	J. P. Mott & Co., Dartmouth	.....
" 15	20358	R. Urquhart & Co., Halifax	3 " "	0 30	Schwartz & Sons, Dartmouth	.....
" 18	20372	H. C. Barnaby & Sons, Bridgewater, N.S.	3 " "	0 30	Todhunter & Mitchell, Toronto.	.....
"	*20379	W. B. Calhoun & Co., Middleton, N.S.	3 for..	0 30	T. B. Barker and Sons, St. John, N.B.	.....
Aug. 20	17931	Dearborn & Co., St. John, N.B.	3 pkgs.	0 25	Dearborn & Co., St. John, N.B.	.....
" 29	23610	M. Bernier, Rivière du Loup	1 lb	0 35	N. Rioux, Quebec	6 65
" 31	23613	Daniens et Cie., Rivière du Loup	1 " "	0 50	Jos. Viel, Rivière du Loup	1 92
Sept. 1	23622	E. Thivierge, Lévis, Que.	1 " "	0 40	E. Couture, Lévis, Que.	3 32
" 2	23624	S. P. Brosseau, Quebec	1 " "	0 22	"	1 50
" 3	23631	A. S. Johnson, Thetford	1 " "	0 30	Whitehead Burrier, Quebec	3 36
" 5	23634	Coaticook Chem. Co., Coaticook	1 " "	0 25	J. A. Matheson & Co., Montreal	6 80
" 5	23637	Woodman & McKee, Coaticook	1 " "	0 40	Pure Gold Mfg. Co., Toronto	6 35
" 15	23639	Duc. L. Gagnon, Ste. Rose	1 " "	0 40	Laporte, Martin & Cie., Montreal	5 32
" 22	21382	J. H. Caille, 702 St. Catherine St., Montreal	1 " "	0 35	Marrotte & Leblanc	.....
Aug. 24	21384	Black & White, 2084 Notre Dame St., Montreal	1 lb	0 35	Ground for the vendors by R. Heron & Co.	7 22
" 24	21365	J. Normandeau, 2266 Notre Dame St., Montreal	1 " "	0 35	Not given	4 84
" 24	21386	A. Brisbois, 2358 Notre Dame St.	1 " "	0 30	D. C. Broneau & Co.	2 97
" 24	21388	Martin & Rabeau, 168 Centre St.	1 " "	0 35	Marrotte & Leblanc	4 22
" 24	21390	G. Dubord, 189 Island St.	1 " "	0 30	"	4 99
Sept. 11	21392	G. L. Guimond, Beauharnois, Que.	1 " "	0 35	Hudson, Herbert & Co.	6 10
" 11	21396	J. G. Leonard	1 " "	0 35	F. F. Daly & Co.	5 44
" 15	21397	A. Allard, Lachine	1 " "	0 35	Laporte, Martin & Co., Montreal	4 39
" 16	21399	W. Bosisquet, 554 Notre Dame St., Maisonneuve	1 " "	0 40	Not known	3 90
" 16	21498	H. F. Barre, 2 St. Catherine St., Maisonneuve	1 " "	0 40	"	.....
" 26	21402	J. M. Moag, Smith's Falls	1 " "	0 40	Pure Gold Co.	7 77
" 26	21404	Cook & Halfpenny, Smith's Falls	1 " "	.....	Not given	7 45
" 27	21406	Cameron & Soper, Brockville	1 " "	.....	"	7 07
" 27	21408	R. N. Dowsley	1 lb	0 40	"	4 85
" 27	21410	Jas. McDougall	1 " "	0 30	"	2 93
" 27	21412	C. Whitney, Prescott	1 " "	0 35	J. W. Chamberlin & Co., Prescott	3 46
Aug. 28	21415	R. Nichols, Cornwall, Ont.	1 " "	0 40	Not known	6 57
" 28	21416	"	1 " "	0 30	"	6 80
Sept. 1	21433	W. G. Rogers, Gananoque, Ont.	1 " "	0 35	Pure Gold Co.	5 61
" 1	21434	J. S. Watt	1 " "	0 40	S. H. & A. S. Ewing	4 94
" 2	23221	W. J. Hobson, 29 King East, Hamilton	1 " "	0 40	"	5 84
" 2	23223	M. Cummings, 302 James, Hamilton	1 " "	0 40	F. F. Daly Co.	4 95

NOTE.—Sample white pepper 21390 was sold as pepper, paid for as such and divided after which given at time of sale that article was other than pepper.

\* Sample 20379. In the original bulletin the name of the Maritime Spice and Coffee Co., was, in

Tabulated Statement of Results.

RESULTS OF ANALYSIS.									
Soluble in Water.	Ash.			Loss at 95° C.—Moisture, &c.	Petrolic Ether Extract.	Microscopical Examination.	Analyst.	Observations.	
	Soluble in Acid after Water.	Acid In-soluble—Sand.	Total.						
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.				
0.36	0.66	0.06	1.08	10.32	5.20	Pepper tissues only.....	Miss E. David-son.	Unadulterated.	
0.60	2.10	0.36	2.96	10.68	4.68	12.40	4.62	A little charcoal.....	"
0.30	1.56	0.42	2.28	11.04	5.20	12.16	4.52	Pepper tissues only; some husk.	"
0.58	2.02	0.28	2.88	10.52	4.00	10.80	5.00	Maize starch and a little wheat; many stone cells.	"
0.66	2.22	0.24	3.12	10.36	4.20	9.45	7.30	Pepper tissues only.....	Genuine.
0.12	0.94		1.06	13.95		9.45	7.10	Pepper.....	A. McGill.
0.26	1.50		1.76	10.83				Wheat flour and other foreign matter.	"
0.46	4.06		4.52	12.12				Foreign tissues.....	"
0.62	2.88		3.50	24.28				Corn starch & much foreign tissue-fermenting matter.	"
0.24	3.90		4.14	11.23				Rice starch and other foreign matter.	"
1.16	1.90		3.06	12.24				Pepper.....	Genuine.
0.08	0.74		0.82	13.31				"	"
0.36	2.30		2.56	12.88				Wheat starch, &c.....	Adulterated.
0.82	1.04	0.24	2.10	10.45	4.30	10.35	4.15	Rice flour and a little wheat starch.	A. Lemoine.
0.58	1.60		2.38	8.83				Pepper tissues.....	A. McGill.
0.50	1.50		2.00	8.33				Rice starch, &c.....	"
0.34	3.14		3.48	8.43				"	Adulterated.
0.76	1.16		1.92	9.35				Wheat and rice starches, &c.	"
0.72	1.20		1.92	9.63				Maize starch, &c.....	"
0.62	5.16		5.78	8.68				Pepper tissues.....	Genuine.
0.40	2.08		2.48	9.58				Wheat starch, &c.....	Adulterated.
1.04	7.92		8.96	7.60				Many starch cells.....	"
0.70	1.22		1.92	9.35				Maize starch, &c.....	"
0.44	1.86	1.06	3.36	8.65	2.05	8.45	1.95	Wheat starch present.....	A. Lemoine.
0.20	1.24		1.44	9.14				Pepper tissue.....	A. McGill.
0.12	0.88		1.00	9.16				"	Genuine.
0.16	0.94		1.10	9.05				"	"
0.52	1.74		2.26	9.17				Wheat flour, &c.....	Adulterated.
0.32	1.96		2.28	9.62				"	"
0.34	1.98		2.32	9.31				"	"
0.56	2.76		3.32	9.45				Pepper tissues.....	Genuine.
1.10	6.18		7.28	8.39				"	"
0.56	4.20		4.76	9.10				"	"
0.44	2.38		2.82	9.88				"	"
1.16	1.32		2.48	9.98				"	"
0.40	2.04		2.44	10.19				Wheat starch, &c.....	Adulterated.

vendors said it was a compound. The package was not marked 'Compound,' and no indication error, given as that of the manufacturer or furnisher.

## INSPECTION OF WHITE PEPPER—

Date of Collection	Number of Sample.	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher.	Alcohol Extraction.
				\$ cts.		p. c.
Sept. 2..	23225	J. L. Brown, 47 McNab St .....	1 lb. ...	0 35	F. F. Daly Co. ....	7.36
" 3..	23227	T. J. Medland, 228 Queen, Toronto	1 " ...	0 40	Not given .....	2.57
" 3..	23229	Frank Lyons, 622 Queen St. West, Toronto.	1 " ...	0 30	Toronto Coffee and Spice Co. ....	
" 3..	23231	John Irvine, 552 Queen St. West, Toronto.	1 " ...	0 40	Todhunter & Mitchell.....	51
" 4..	23236	Hartmann & Co., Colborne St., Toronto.	1 " ...	0 40	Not given .....	
" 5..	23238	T. B. Paisley, 182 Queen St. East, Toronto.	1 " ...	0 25	Humphrey, Toronto. ....	3.57
" 5..	23240	C. R. Story, 252 Queen St. East, Toronto.	1 " ...	0 30	Not given. ....	
Aug. 20..	22109	W. F. O'Neill, Clinton, Ont. ....	¾ " ...	0 30	Todhunter & Mitchell, Toronto.	6.85
Aug. 24..	22122	H. M. Tudhope, Wingham. ....	1 " ...	0 40	Hamilton Coffee and Spice Co., Hamilton.	6.13
" 25..	22126	John Waddell, Harrison, Ont.....	1 " ...	0 40	Gorman & Eckart, London, Ont.	4.84
" 19..	17478	Wright & Co., Minnedosa, Man.	½ " ...	0 25	.....	6.60
" 20..	17481	S. Schooley, Gladstone, Man.....	½ " ...	0 20	.....	8.36
" 21..	17484	J. O'Rielly, Portage LaPrairie ...	½ " ...	0 25	.....	6.11
" 25..	17495	W. J. Wilcox & Co., Virdeu, Man.	½ " ...	0 20	.....	
" 26..	17500	G. D. Raymond, Carmen, Man ...	¾ " ...	0 30	The Dyson Co., Winnipeg ...	
Sept. 10..	21754	Revillion Bros., Edmonton. ....	3 tins..	0 30	W. G. Dunn & Co., Hamilton.	
" 15..	21761	W. Pitman & Co., Calgary, Alta..	½ lb...	0 20	Codville & Co., Winnipeg. ...	
" 4..	23587	Simon Léiser & Co., Ladysmith, B.C.	3 cans.	0 40	Simon Léiser & Co., Victoria, B.C.	

## Tabulated Statement of Results—Concluded.

RESULTS OF ANALYSIS.							Microscopic Observations.	Analyst.	Observations.
Ash.				Loss at 95° C. Moisture.	Petroleum Ether Extract.				
Soluble in Water.	Soluble in Acid after Water.	Acid in-soluble—Sand.	Total.						
P. C.	P. C.	P. C.	P. C.	P. C.	P. C.	P. C.			
0.30	1.30	.....	1.50	10.00	.....	.....	Pepper tissue.....	A. McGill....	Genuine.
0.30	1.75	.....	2.05	9.30	.....	.....	Wheat flour, &c., other foreign tissues.	" .....	Adulterated.
0.28	1.80	0.24	2.30	11.95	4.40	4.25	Wheat starch present, and kang stone cells, probably of coconut.	A. Lemoine..	" .....
0.20	1.90	.....	2.10	9.80	.....	.....	Wheat flour.....	A. McGill....	" .....
1.00	1.40	0.20	2.00	8.50	5.10	5.10	A little wheat starch .....	A. Lemoine..	Slightly adulterated.
0.63	1.06	.....	1.70	9.53	.....	.....	Wheat flour and other starches.	A. McGill....	Adulterated.
0.22	1.84	0.20	2.26	9.16	3.20	3.75	Wheat starch.....	A. Lemoine..	" .....
0.18	1.46	.....	11.91	.....	.....	.....	Pepper tissues .....	A. McGill....	Genuine.
0.38	2.74	.....	3.12	13.11	.....	.....	Pepper tissues .....	A. McGill....	Genuine.
0.40	1.84	.....	2.24	12.16	.....	.....	Wheat flour .....	" .....	Adulterated.
0.16	0.86	.....	1.02	14.90	.....	.....	Pepper tissue.....	" .....	Genuine.
1.04	2.16	.....	3.50	12.22	.....	.....	Wheat flour and buckwheat	" .....	Adulterated.
0.30	1.60	.....	1.92	14.90	.....	.....	Pepper tissue.....	" .....	Genuine.
0.28	1.22	0.14	1.64	10.80	4.55	4.75	Wheat starch and a little charcoal.	Miss E. Davidson.	Adulterated.
0.52	1.96	1.14	3.62	6.40	4.15	3.95	Many whitestone cells present (apparently foreign).	" .....	" .....
1.22	2.08	0.66	4.06	8.15	5.35	5.50	Some wheat starch and tumeric.	" .....	" .....
0.75	2.00	1.18	3.94	10.30	6.55	6.55	Pepper tissues only .....	" .....	Genuine.
1.56	0.90	0.14	2.60	10.00	6.00	5.95	Contains much potato starch.	" .....	Adulterated.



## INSPECTION OF RED PEPPER—

Date of Collection	Number of Sample.	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher.
Aug. 20..	17479	A. E. Remlin, Neepawa, Man. ....	½ lb...	\$ cts. 0 20	.....
" 21..	17485	Hudson Bay Co., Portage LaPrairie.	½ " ...	0 20	.....
" 26..	17499	W. T. Roblin & Co., Carman, Man.	½ " ...	0 20	.....

## Tabulated Statement of Results.

RESULT OF ANALYSIS.							Analyst.	Observations.
Water solu- ble.	Ash.		Moisture.	Alcohol Extract.	Dry residue in- soluble in Alco- hol.	Sum—Direct Estimation.		
	Soluble in Acid after Water.	Total.					p. c.	p. c.
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.	p. c.		
11.28	1.22	12.50	8.86	21.60	69.50	99.96	A. McGill.	Has a bright red colour; does not dye wool in acid bath; microscope shows wheat starch and some foreign tissues. The high soluble ash and alcoholic extraction are remarkable. Adulterated with starch and other materials.
4.70	3.54	8.24	9.22	7.52	83.62	100.36	"	Reddish salmon colour; does not dye wool in acid bath; microscope shows no starch, but some apparent foreign tissue. Not identified.
2.36	3.02	5.38	8.92	13.92	77.90	100.74	"	Reddish salmon colour; dyes wool in acid bath; microscope shows much wheat starch and foreign tissue. Adulterated with flour and coloured with a coal tar dye.

INSPECTION OF ALLSPICE—Tabulated Statement of Results.

Date of Collection	No. of Sample	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher.	Microscopic Examination.	Observations.	Analyst.
1903.				\$ cts.				
Sept. 14.	20352	A. L. Doyle & Co., Halifax, N.S.	3 pkgs.	0 15	W. H. Schwartz & Sons, Halifax, N.S.	Pimento tissues.	Genuine.	A. McGill.
" 15.	20 63	J. L. Archibald & Son "	3 "	0 18	Simsom Bros, Halifax.	"	"	"
" 15.	20380	F. W. Crossac "	3 "	0 21	Brown & Webb "	"	"	"
Aug. —	4361	Brace & McKay, Sunnyside.	1 lb.	0 12	Hudon, Herbert & Co., Montreal.	"	"	"
" 27.	4 172	Geo. Rachtman, Charlottetow	1 "	0 14	Carroll Bros, Charlottetown.	"	"	"
" 20.	17359	Frank E. Williams, 80 Charlotte St., St. John.	1 "	0 36	Dalton Bros, Toronto, Ont.	Essentially pimento; a little maize starch.	Doubtful.	"
" 29.	17954	Adams, Burns & Co., Water St., Bathurst.	1 "	0 30	John P. Mott, Halifax, N.S.	Pimento tissues.	Genuine.	"
Sept. 8.	17959	Henry E. Hill, King St., Charlotte, N.B.	1 "	0 30	Unknown	"	"	"
Aug. 31.	23016	Romeo Lesperance, Montmagny, Q.	1 "	0 40	Maxwell & Co., Toronto.	Unusually large number of stone cells.	Doubtful.	"
" —	23025	M. W. Coleman, Quebec.	1 "	0 38	S. H. & A. S. Ewing, Montreal.	Pimento tissues.	Genuine.	"
" 22.	22 119	Andrew Young, Seaford.	1 "	0 30	Todhunter & Mitchell, Toronto.	"	"	"
" 26.	21 96	J. S. Ireland, Mount Forest	3 cans	0 30	"	"	"	"
" 20.	17 680	John Small, Neepawa	3 "	0 30	B. C. Coffee & Spice Co., Vancouver.	Wheat and barley starches.	Adulterated.	"
" 25.	23362	J. Charters, Vancouver.	3 "	0 30	"	"	"	"
" —	23373	James Young, Nanaimo	3 bottles	0 40	J. A. Fuiger & Co., San Francisco.	Pimento tissues.	Genuine.	"
" —	23374	H. A. Millar "	3 "	0 36	Simon Leimer, Victoria, B.C.	"	"	"

INSPECTION OF MIXED SPICES—Tabulated Statement of Results.

Date of Collection	No. of Sample	Name and Address of Furnisher	Quantity	Cost.	Name and Address of Manufacturer or Furnisher.	Analyst.	Observations.
1903.				\$ cts.			
Sept. 15..	* 20682	J. L. Archibald & Son, Halifax, N.S.	3 pkgs.	0 15	J. P. Mott & Co., Halifax.....	A. McGill..	Ground spices; wheat flour present; adulterated.
" "	20880	W. B. Calhoun & Co., Middleton, N.S.	" "	0 30	T. B. Barker & Sons, St. John, N.B.	" "	Mixed whole spices; genuine.
" "	4373	Geo. Rackham, Charlottetown.	1 lb.....	0 20	Carroll Bros., Charlottetown....	" "	Ground spices; genuine.
" 10..	21753	Garripley & Lessard, Edmonton.	3 tins.....	0 40	The Great West Spice Mills, Winnipeg.	" "	Mixed spices, maize and some wheat starch; adulterated.
" 18..	20874	Fresman Bros., Bridgewater, N.S.	*3 pkgs....	0 30	J. P. Mott & Co., Dartmouth, N.S.	" "	Mixed whole starch; genuine.

\* Pickling spice.

## INSPECTION OF CASSIA AND GROUND

Date of Collection	No. of Sample	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher.
				\$ cts.	
Aug. 20..	17929	C. S. Phillips, cor. Douglas Avenue and Main St., St. John, N.B.	$\frac{1}{2}$ lb. . . . .	0 25	Todhunter, Mitchell Co., Toronto.
" 31..	23615	A. Blais, Montmagny, Que. . . . .	1 " . . . . .	0 40	Standard Spice Mills, Three Rivers.
Sept. 1..	23620	Chas. Castonguay, Lévis . . . . .	1 " . . . . .	0 40	Whitehead & Turner, Quebec..
Aug. 26..	21405	Cook & Halfpenny, Smith's Falls, Ont.	1 " . . . . .	0 35	Not given . . . . .
" 27..	21409	R. N. Dowsley, Brockville, Ont. . . . .	1 " . . . . .	0 40	" . . . . .
Sept. 1..	21432	T. A. Rogers, Gananoque . . . . .	1 " . . . . .	0 40	" . . . . .
Aug. 25..	22132	Whitehead Huether, Walkerton . . . . .	1 " . . . . .	0 40	Pure Gold Spice Manufacturers, Toronto.
Sept. 1..	23141	Stuebing & Co., Berlin . . . . .	$\frac{1}{2}$ " . . . . .	0 20	Gorman Eckhart, London, Ont.
Aug. 24..	17491	J. Bower & Co., Brandon . . . . .	$\frac{1}{2}$ " . . . . .	0 20	.....
" 29..	17953	A. N. DesBrisay, Bathurst, N.S. . . . .	$\frac{1}{2}$ " . . . . .	0 25	Todhunter, Mitchell & Co., Toronto.
Sept. 9..	17963	Jas. F. McCluskey, Grand Falls, N.B.	3 pkgs. . . . .	0 30	Maritime, Spice and Coffee Co., St. John, N.B.

NOTE.—Since Cassia and Cinnamon are the barks of allied species of Cinnamomi, they necessarily valueless portions of cortex and wood; and is characterized by a greater preponderance of bast cells, and these species; and even its indications must be accepted with caution, since some samples of each species

## CINNAMON—Tabulated Statement of Result.

RESULT OF ANALYSIS.				Remarks.	Opinion.	Analyst.
Hydroscopic Moisture.	Ash.					
	Total.	Soluble.	In- soluble.			
p. c.	p. c.	p. c.	p. c.			
6.66	0.37	6.29	Cassia tissue .....	Adulterated ..	A. McGill	
3.22	0.92	2.30	Chiefly cassia .....	" ..	"	
8.92	0.52	8.40	Cassia .....	" ..	"	
3.22	0.60	2.62	Cassia tissues and foreign starch. ....	" ..	"	
4.00	1.68	2.32	Cinnamon and cassia tissues. ....	" ..	"	
4.56	0.64	3.92	Chiefly cassia tissues. ....	" ..	"	
4.08	0.84	3.24	Cinnamon with some cassia .....	" ..	"	
4.90	0.78	4.12	Chiefly cassia. ....	" ..	"	
8.26	1.46	6.80	Cassia tissues. ....	" ..	"	
8.42	2.76	1.80	Ground cassia ; adulterated with wheat flour.	" ..	"	
7.08	6.58	0.98	Ground cassia ; apparently genuine. .	" ..	"	

have many features in common. The latter is distinguished by having been more carefully freed from other structural peculiarities. Hence the microscope is the chief and only reliable means of differentiating closely approximate to those of the other.

A. MCGILL.

## INSPECTION OF GROUND CLOVES—

Date of Collection	Number of Sample.	Name and Address of Vendor.	Name and Address of Manufacturer or Furnisher.
Sept. 15.	20364	J. L. Archibald & Co., Halifax	Brown & Webb, Halifax
" 15.	20378	W. B. Calhoun & Co., Middleton, N.S.	Maritime Spice and Coffee Co., St. John
Aug. 27.	4367	A. Currie & Co., Souris, P.E.I.	N. Rattenburg, Charlottetown
" 25.	17911	King Asbell & Co., Sussex, N.B.	G. S. DeForest & Sons, St. John
Sept. 8.	17956	E. M. Gamong, Charlotte	A. J. Teed Co., St. Stephen, N.B.
" 8	23626	E. G. Turcot, Quebec	Turot Freres & Cie, Quebec
Aug. 25	21380	Martin & Rabreau, 168 Centre St., Montreal	Marrotte & Leblanc
" 25	21394	Omer Marchand, Beaubarnois	L. Chaput fils & Co.
" 27	21414	J. H. Bradley, Prescott	H. P. Eckardt & Co.
Sept. 4	23235	James & Deming, Colborn St., Brantford	F. F. Dally Co.
" 1.	22142	Bentzer & Co., Berlin, Ont	Gorman, Eckart & Co., London
Aug. 21.	17490	W. J. Young, Brandon, Man.	
" 27.	23701	G. R. Hanna & Co., Carman	

NOTE. The adulteration in some of the above samples consists in the addition of foreign matter of cloves. Part of this tissue (e.g. woody fibre) may come from admixture of clove stems, but this cannot be volatile matter, and the very marked lowering of the volatile oil. Of course, these features might come October, 1933. A. McGILL.

## Tabulated Statement of Results.

RESULT OF ANALYSIS.							Remarks.	Analyst.
Ash.								
Total.	Insoluble.	Soluble.	Hygroscopic Moisture.	Volatile Oil.	Total Volatile Matter.			
p. c.	p. c.	p. c.	p. c.	p. c.	p. c.			
5.94	2.82	3.12	3.30	14.50	17.80	Colour light, coarse, genuine.....	A. McGill.	
7.82	4.48	3.34	5.18	3.74	14.92	Colour normal, fine; insoluble ash high and a decided trace was insoluble in acid; some tissues doubtfully genuine; doubtful.	"	
6.78	3.68	3.10	3.28	14.78	18.06	Light colour, coarsely ground, clove tissues only, genuine.	"	
7.08	3.84	3.24	4.28	14.48	18.76	Colour light, fine, genuine.....	"	
6.14	3.20	2.94	4.18	17.76	21.94	Colour normal, fine, genuine.....	"	
6.52	3.28	3.24	7.54	12.22	19.76	Colour dark, coarse, genuine.....	"	
7.00	3.76	3.24	4.26	5.52	9.78	Colour dark, fine, taste weak, excess of stone cells, foreign tissue, adulterated.	"	
6.76	3.48	3.28	5.22	10.46	15.68	Colour light, coarse, genuine.....	"	
5.64	2.80	2.84	6.00	15.54	21.54	Colour normal, fine, genuine.....	"	
6.50	3.34	3.16	4.68	13.14	17.82	"	"	
5.96	3.10	2.86	6.72	15.86	22.58	"	"	
6.22	3.20	3.02	9.56	12.70	22.26	Colour normal, coarse, some doubtful structures under microscope, hygroscopic moisture very high, doubtful.	"	
6.98	3.86	3.12	5.96	5.54	11.50	Colour light, coarse, taste feeble, foreign tissues of light colour, but non-starchy, adulterated.	"	

non-starchy character, containing stone cells and other vegetable tissues not largely present in genuine certainly determined. The effect of this adulteration is shown in the considerable lowering of the total from addition of exhausted cloves. The methods of analysis adopted are those laid down in Bulletin 73.



## INSPECTION OF GINGER—

Date of Collection	Number of Samples.	Name and Address of Vendor.	Quantity.	Cost.	Name and Address of Manufacturer or Furnisher.
				\$ c.	
Sept. 15..	20359	W. J. Hopgood, Halifax, N.S. ....	3 pkgs. . . . .	0 27	Schwartz & Sons, Halifax . . . . .
" 15..	20360	J. L. Archibald & Sons, Halifax, N.S. 3 " . . . .	3 " . . . . .	0 30	Brown & Webb, Halifax . . . . .
Aug. 20..	17928	E. E. McMichael, 40 Dock St., St. John, N.B. . . . .	1 " . . . . .	0 20	Imported by Vendor and ground here.
" 28..	17949	W. Bannon, Newcastle, N.B. ....	1 lb. . . . .	0 30	T. B. Barker & Sons, St. John, N.B.
Sept. 8..	17957	Inches & Grimmer, Charlotte Co. ....	3 " . . . . .	0 30	Todhunter Mitchell, Toronto. ....
" 9..	17964	A. J. Martin, Grand Falls. . . . .	3 " . . . . .	0 30	A. J. Teed Co., St. Stephen, N.B.
Aug. 2..	23226	J. L. Brown, 47 McNab St., Hamilton. . . . .	1 " . . . . .	0 35	F. F. Dally Co. ....
" 2..	23234	James & Dening, Brantford, Ont. ....	1 " . . . . .	0 40	" . . . . .
" 24..	22121	Geo. Powell, Blyth, Ont. . . . .	1 " . . . . .	0 30	Unknown . . . . .
Sept. 9..	21748	Fowler & Co., Wetaskiwin. . . . .	.....	.....	Blue Ribbon Mfg. Co., Winnipeg.

## Tabulated Statement of Results.

RESULT OF ANALYSIS.			Microscopic Character.	Observations.	Name of Analyst.
Hygroscopic Moisture.	Cold water extractive, p.c. on dry substances.	Insoluble matter, p. c. on dry substances.			
p. c.	p. c.	p. c.			
11.62	19.5	80.5	Ginger starch and tissue.....	Genuine.....	A. McGill.
11.24	19.7	81.3	" .....	" .....	"
10.88	17.5	82.5	" .....	" .....	"
11.60	14.3	85.7	" .....	Contained exhausted ginger or is of lower than average quality.	"
8.12	13.8	86.2	" .....	" .....	"
10.74	19.6	80.4	" .....	Genuine.....	"
7.20	21.4	78.6	" .....	" .....	"
12.30	15.1	84.9	" .....	Contains exhausted ginger or is of lower than average quality.	"
7.78	15.5	84.5	" .....	" .....	"
10.86	14.9	85.1	" .....	" .....	"
10.14	18.7	81.3	Ginger starch and tissue with a trace of wheat starch.	Genuine.....	"
12.40	16.7	83.3	Ginger starch and about 20 p.c. wheat.	Adulterated with foreign starchy matter.	"
12.84	18.9	81.1	Ginger starch, &c., with a trace of foreign starch.	Genuine .....	"

OTTAWA, December 1, 1903.

*Method of working on ground ginger.*

The adulteration of ginger usually consists either in the addition of foreign matter (flour, starches, etc.) or in the use of exhausted rhizomes, *i.e.* ginger from which the valuable principles have been more or less washed out.

The detection of foreign matter is made by means of the microscope; but the residue left after water extraction (as below) is better suited to the uses of the microscopist than in the raw sample.

The detection of exhausted ginger naturally depends upon a knowledge of the extracted matter yielded by the sample and a comparison of this with the normal extractive which genuine ginger yields on similar treatment.

Since the commercial extraction of ginger is made with cold water, this is the proper solvent to use in the laboratory.

Bulletin 48, (May, 1897), p. 13—records the result of four cold water extractions of genuine ginger by Mr. Babington. These gave a maximum of 16.7 and a minimum of 12.3 per cent.; with a mean of 14.7 per cent.—calculated on the dry material. In the extraction of ginger by cold water, much will naturally depend upon the method of carrying out the operation. Unfortunately Mr. Babington has not recorded the method employed by him. I am convinced that the numbers obtained would have been considerably higher, and possibly more constant for genuine ginger, had mechanical agitation been used in treating with the solvent. The advantages of mechanical agitation are sufficiently apparent; the increased effectiveness, and the fact that given conditions can be exactly duplicated, are the most important. I have worked as follows:—

*Moisture.*—Five grammes of the sample is exposed on a watch glass to a temperature of 90°–100° in the water-oven, until constant weight is obtained. When an ordinary drying oven is used this may require 10 to 12 hours or more. With my oven, using a forced draught, 2 to 3 hours is sufficient.

*Cold Water Extractive.*—The dry sample is transferred by means of a dry funnel, to the centrifuge tube—of about 150 cc. capacity—and treated with 100 cc. of water. The tubes are stoppered and placed in the mechanical shaker (having horizontal motion) for 30 minutes. They are then whirled for 10 minutes, when the insoluble matter becomes compacted tightly in the bottom of the tube and the clear supernatant liquid filters readily. The filtration is made by a weighed filter paper, whose dry weight is known. The undissolved residue is treated a second time with 100 cc. of cold water in the shaker, again whirled, and the clear liquid poured through the filter. Finally, the residue is washed on to the filter using about 100 cc. water. (The exact amount is immaterial, since only negligible traces of soluble matter remain in this residue.)

Where a centrifuge is not available the filtration is very tedious, and sometimes impossible. It may be necessary, in this case, to use two or more filters, or to work on smaller amounts of the sample. In either case the liability to error is much increased.

The filters, with their contents, may be allowed to stand at the ordinary temperature over night; or they may be at once transferred to a drying oven, kept below 50° C—having a forced draught. In this case there is no danger of gelatinizing the starch, and the drying may be completed in a few hours. When approximately dry, the temperature of the oven may be raised to 90°–95° and the drying completed at this temperature.

*NOTE.*—In order to ascertain how much extractive was taken out by the second treatment with 100 cc. water, I determined the loss of weight after one and two treatments, in sample 17957—and obtained for 1 treatment—19.6 per cent. For 2 treatments—21.4 per cent. It is evident from these figures that a third treatment would be superfluous.

perature. The filters with their contents are then weighed (between watch glasses) the more or less lumpy mass carefully transferred to a small mortar, ground up, returned to the filter, and again dried for an hour or two. The second weighing should not materially differ from the first, and gives the dry, insoluble matter.

In order to show how constant is the extractive matter so obtained, I quote the following work done on four samples. The second estimation was made after an interval of three weeks during which the samples had stood on the heating coils of the laboratory. It will be seen that, by this treatment, they had lost about one-third of their natural hygroscopic moisture.

No.	Moisture.	Extractive.	Calculated on Dry Substance	Mean.
20360—(a) .....	11.24	17.48	19.7	} 20.0
—(b) .....	7.14	18.76	20.2	
17957—(a) .....	10.74	17.46	19.6	} 20.5
—(b) .....	7.20	19.80	21.4	
17949—(a) .....	11.60	12.66	14.3	} 14.0
—(b) .....	8.12	12.68	13.8	
17964—(a) .....	12.30	13.24	15.1	} 15.2
—(b) .....	7.78	14.32	15.5	

It should be noted that 17957 (a) is the result of extraction with only 100 cc. of water; the other extractions represent two treatments with water.

When a sample of ginger is treated with water, as described, the re-dried sample always has a distinctly darker colour than the original. Duplicates which have been similarly treated, yield residues, leaving exactly the same colour. Whether or not it would be safe to infer that a dark coloured sample of ginger had undergone washing and drying, would require larger experience than I have had. But I think it safe to regard dark coloured samples with suspicion; and to insist upon their yielding a normal percentage of extractive matter to cold water.

In the accompanying table it will be noted that the first six samples have a good colour, and with the exception of No. 5, which contains about 20 per cent of wheat flour—yield an extractive of at least 19 per cent of their dry weight. The mean extractive for samples 1 to 6 (omitting No. 5) is 19.7 per cent, the extremes being 18.7 and 21.4 per cent.

Since the remaining samples yield a decidedly lower extractive, under similar treatment, there can be little doubt that they represent ginger rhizomes which have been more or less exhausted with water before grinding; or an admixture of ginger which has been fully exhausted and re-dried. This would account for the decidedly darker colour of these samples.

If these samples represent a natural and unadulterated ginger, of a lower grade than that represented by the other samples, we should have evidence of the fact in our possession. I have not met an authenticated sample of ginger which gave less than about 19 per cent of extractive to cold water, when treated as above described.

A. MCGILL.

