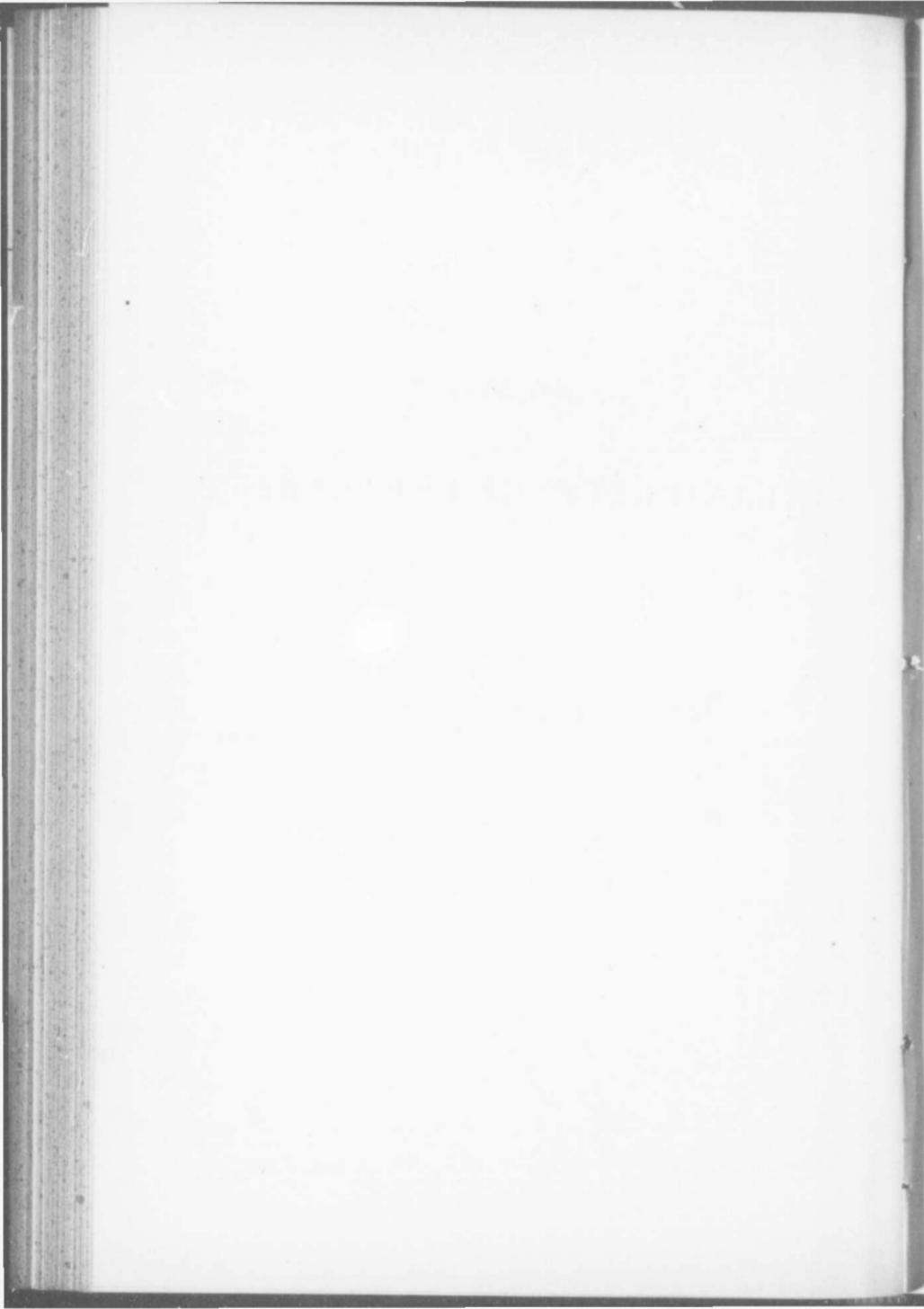


LABORATORY
OF THE
INLAND REVENUE DEPARTMENT

OTTAWA, CANADA

BULLETIN No. 232

COCA-COLA (SYRUP).



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COCA-COLA (SYRUP).

OTTAWA, February 12, 1912.

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

SIR,—It has frequently been suspected that cocaine might be present, as such, in the beverage known as Coca-Cola, and representations to this effect have several times been made to this department. In consequence of these complaints I have more than once examined the article, as found in the local market; and on the 14th July, 1910, I reported to you the results of inspection as follows:—

“I beg to refer to yours of the 15th April (L. 69721) on the subject of Coca-Cola; also to a further letter (L. 71528) dated 15th June, touching the same matter.

“Since receipt of these letters I have had correspondence with various persons, with a view to getting, at first hand, information regarding analysis, &c., and would specially acknowledge the courtesy of W. C. Gordonsmith, City Editor of the *Witness*, Montreal.

“The only definite information regarding the composition of Coca-Cola which I have been able to get, is as follows:—

“*Dr. Charles A. Crampton*, chemist to the Internal Revenue, Washington:—

“The content of caffeine is about $\frac{1}{100}$ of one per cent. The other constituents were cocaine in a small amount, and theobromine in a small amount.” (Quoted by Dr. H. W. Wiley, in a letter to Mr. Gordonsmith, dated 17th May, 1910.)

In the same letter Dr. Wiley says:—“No report or other publication, setting forth the composition of this product (Coca-Cola) has been published by the department up to the present time.”

“*Farmers' Bulletin* 393, Department of Agriculture, Washington, issued 29 April, 1910, gives, in very general terms, a popular presentation of the subject of Medicated Soft Drinks, but contains no analytical data.

"The Report of the Chemist (Dr. H. W. Wiley), Department of Agriculture, Washington, for 1908, contains at page 28 the following statement: 'Among 80 samples of soft drinks, a considerable number were free from cocaine; and when its presence was established, the amount varied from a trace to 0.05 grain to the ounce.'

"Document 644, (Senate of U. S. A., 1908-9), at p. 372 gives a list of 39 kinds of so-called 'Soft Drinks' sold in the United States, which were found to contain caffeine and extract of coca leaf. It is not stated that the alkaloid cocaine was found in any of these samples. Some are claimed to be prepared from a decocainized coca leaf, the refuse product discarded in the manufacture of cocaine.

"The Montreal *Witness* of April 9, 1910, contains an article on Coca-Cola, in which the following statement occurs:—

"Analysis revealed that in each glass of Coca-Cola there is from one to one and a half grains of caffeine, one four hundredth ($\frac{1}{400}$) of a grain of cocaine, &c." A large "glass" may be taken as containing about 14 fluid ounces, or nearly 400 cubic centimetres. On this basis, the above statements would mean that in Coca-Cola there is present 0.024 per cent of caffeine and 0.00004 per cent of cocaine (weight in volume.)

I have caused four samples of Coca-Cola (purchased in Ottawa, and bottled in Montreal under the authority of the Coca-Cola Co., of Atlanta, Ga.), to be very carefully examined in this laboratory, for caffeine and cocaine. Working upon quantities of 200 cubic centimetres, the following percentages of caffeine were separated and identified. In three samples, 0.005 per cent; in one sample 0.0055 per cent weight in volume.

In none of these samples could cocaine be detected. By working upon samples to which cocaine, in known quantity, was intentionally added, it was found that the separation and identification of cocaine (in volumes 200 cc.) are not possible, when the quantity present is less than 0.0005 per cent, *i.e.*, one milligramme per 200 cubic centimetres. The certain detection of so small an amount as 0.00004 per cent of cocaine would therefore involve the use of at least 5 litres of the original sample. In the absence of certified statements, and description of the method of working, I am compelled to doubt the scientific value of work done under such conditions.

The minimum dose of cocaine (Hydrochloride) given in the British *Pharmacopœia* is ($\frac{1}{4}$) one-sixth of a grain, and this may be assumed to be the least quantity which is physiologically active. The highest amount quoted by Dr. Wiley (Report 1908) as found in soft drinks is five one-hundredths (0.05) of a grain per ounce; which for a glass (14 oz.) would amount to a dosage of seven-tenths (0.7) grain. This is far in excess of safety, and might even be fatal. The amount ($\frac{1}{400}$ grain per glass) quoted in Senate Document 644 is, as already stated, so small as to escape detection, by analytical methods, unless work is done upon volumes exceeding 5 litres. Whether such an amount could have any influence in forming the so-called "cocaine habit," I am unable to decide. It is certain that the physiological significance of this quantity must be infinitesimally small, if not actually *nil*.

It would therefore appear that the article, as sold in bottles, is either entirely free from cocaine, or contains so insignificant a trace of the alkaloid as to be negligible.

More recently it has been urged that, although practically absent from the beverage as sold in bottles, cocaine might be present in the syrup supplied to soda fountains.

In order to determine this point, 68 samples of such syrup were purchased, in different parts of Canada, in October and November last; and these have been subjected to analysis, with the result that no cocaine has been found in any of them. Caffeine has been found in all of them, in amount varying from 0.15 to 0.72 of a grain per ounce. The average amount is about 0.60 grain per ounce of the syrup. So far as I can learn, this is the usual amount of syrup employed in making a glass of the beverage. The pharmacopœal dose of caffeine is 1 to 5 grains; so that the quantity present in a glass of Coca-Cola, as supplied at fountains is well within the limit of safety.

I beg to recommend the publication of this report as Bulletin No. 232.

I have the honour to be, sir,

Your obedient servant,

A. MCGILL,
Chief Analyst.

BULLETIN No. 232—COCA-COLA.

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.)	RESULTS OF ANALYSIS		No. of Sample.
					Quantity.	Cents.	Manufacturer.	Furnisher.		Cocaine.	Caffeine per ounce grains.	

DISTRICT OF NOVA SCOTIA—R. J. WAUGH, INSPECTOR.

1911.										p. c.	p. c.	
Oct.	26	Coca-Cola.....	46735	Wm. Patrick, Halifax, N.S.	8 oz.	15	Unknown.....	N. D. & C. Co., Halifax, N.S.	.....	Samples lost.	.....	46735
"	26	".....	46736	A. H. Buckley, Halifax, N.S.	12 "	30	Coca-Cola Co., Georgia, U.S. A.	".....	.....	None.....	0.69	46736
Nov.	9	".....	46737	A. N. Melitides, Halifax, N.S.	12 "	20	Unknown.....	".....	.....	".....	0.56	46737
"	13	".....	46738	C. A. Mumford, Halifax, N.S.	12 "	50	Coca-Cola, Atlanta, Georgia, U.S.A.	".....	.....	".....	0.64	46738
"	13	".....	46739	T. M. Power, Halifax, N.S.	8 "	29	".....	".....	.....	".....	0.63	46739

DISTRICT OF PRINCE EDWARD ISLAND—WM. A. WEEKS, INSPECTOR.

Oct.	16	Coca-Cola.....	46086	J. G. Jameson, Charlottetown, P.E.I.	12 oz.	60	Home Office, Atlanta.....	.....	.....	None.....	0.67	46086
"	16	".....	46087	Johnson & Johnson.....	12 "	60	Unknown.....	.....	.....	".....	0.54	46087
"	26	".....	46088	E. J. DesRoches, Charlottetown, P.E.I.	12 "	60	.....	N. Ratlenbury, Charlottetown, P.E.I.	.....	".....	0.63	46088

DISTRICT OF NEW BRUNSWICK—J. C. FERGUSON, INSPECTOR.

Oct.	13	Coca-Cola	45520	Wm. Hawker & Son, St. John, N.B.	12 oz.	30	Coca-Cola Co., Toronto, Ont.	None	0 67	45520
"	21	"	45521	M. V. Paddock, St. John, N.B.	12 "	35	"	"	0 43	45521
Nov.	3	"	45522	Checchi Bros., St. Stephen, N.B.	12 "	30	Nat. Drug & Chem. Co., Ltd., St. John, N.B.	"	0 15	45522
"	7	"	45523	C. Fred. Chestnut, Fredericton, N.B.	12 "	60	Coca-Cola Co., Toronto, Ont.	"	0 47	45523
"	15	"	45524	Wm. McMullen, Moncton, N.B.	12 "	30	Coca-Cola Co., Philadelphia and Chicago, U.S.	"	0 56	45524

DISTRICT OF QUEBEC—F. X. W. E. BELAND, INSPECTOR.

Oct.	12	Coca-Cola	36978	New York Ice Cream Saloon, Quebec.	12 oz.	25	Coca-Cola, Toronto Manufacturers.	None		
"	13	"	36979	Taury chesyrres, 74 Rue St. Jean, Quebec.	12 "	30	"	"	0 60	36979

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

Nov.	6	Coca-Cola	1159	Anastasos Bey Thetford Mines, P.Q.	1 pt.	40	The Coca-Cola Co., Toronto.			1159
"	9	"	1160	A. Ayoub, Sherbrooke	1 "	40	A. Shanggh, Sherbrooke.	None	0 50	1160
"	22	"	1161	M. Nicholson, Sorel	1 "	30	The Coca-Cola Co., Toronto.	"	0 63	1161
"	23	"	1162	Fournieros & Co., St. Hyacinthe.	1 "	40	"	"	0 54	1162

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

Oct.	16	Coca-Cola	40901	S. Moisan, 661 St. Lawrence Blvd., Montreal.	$\frac{7}{8}$ lb.	25	Coca-Cola Co., Montreal.	None	0 45	40901
"	16	"	40902	M. Nicholson, 481 St. Lawrence Blvd., Montreal.	$\frac{7}{8}$ "	45	"	"	0 50	40902
"	16	"	40903	E. D. Howick, 63 St. Lawrence Blvd., Montreal.	$\frac{7}{8}$ "	30	"	"	0 56	40903

BULLETIN No. 232—COCA-COLA.

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.)	RESULTS OF ANALYSIS		No. of Sample.
				Quantity.	Cents.	Manufacturer.	Furnisher.		Cocaine.	Caffeine per ounce grains.	

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

1911.									p. c.	p. c.	
Oct. 16	Coca-Cola	40904	Coca-Cola Co., 591 St. Paul St., Montreal.	7	lb.	15	Vendors	This sample is vendors' second grade and is used in their product that is put up in small bottles.	None	0.45	40904
" 16	"	40905	"	7	"	15	"	This sample is vendors' first grade and is put up for use at soda fountains.	"	0.60	40905

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

Oct. 9	Coca-Cola	49001	Estate W. H. Roger, Ottawa.	12	oz.	50	Coca-Cola Co., Toronto.	Manufacturers	None	0.60	49001
" 12	"	49002	W. F. Sparham, Arnprior.	12	"	50	"	"	"	0.60	49002
" 21	"	49003	S. J. Ladas & Co., Sparks St., Ottawa.	12	"	50	"	"	"	0.52	49003
" 21	"	49004	Allen & Cochrane, Sparks St., Ottawa.	12	"	50	"	"	"	0.45	49004
" 24	"	49005	The Coca-Cola Co., Sparks St., Ottawa.	12	"	30	Vendors	"	"	0.56	49005

DISTRICT OF KINGSTON—JAS. HOGAN, INSPECTOR.

1770-2	Nov. 2	Coca-Cola	48532	Geo. Mahood, Kingston.	12 oz.	40		N. C. Polson, Kingston.	None	0.56	48532
	" 3	"	48533	N. R. Grimm, Kingston.	12 "	39		A. J. Aclan, Toronto.	"	0.64	48533
	" 3	"	48534	M. P. Pappas & Co., Kingston.	12 "	30		Coca-Cola Co., Toronto.	"	0.64	48534
	" 3	"	48535	T. Sakells, Kingston.	12 "	30		T. McMahon, Toronto.	"	0.45	48535
	" 3	"	48536	Geo. Masoud, Kingston.	12 "	30		N. C. Polson, Kingston.	"	0.69	48536

DISTRICT OF TORONTO—H. J. DAGER, INSPECTOR.

	Oct. 16	Coca-Cola	49310	The Hennessey Drug Stores Ltd., Hamilton.	$\frac{1}{2}$ lb.	25		Coca-Cola, Atlanta, N.S.	None	0.56	49310
	" 20	"	49311	F. H. Webb, 714 Queen St. East Toronto.	12 oz.	30		Coca-Cola, Co., Toronto.	"	0.54	49311
	" 20	"	49312	Bruce & Hunt Co., Ltd., 466 Spadina Ave., Toronto.	12 "	40		" "	"	0.43	49312
	" 24	"	49313	Dumas Bros., Owen Sound	$\frac{1}{2}$ lb.	25	Unknown	Unknown	"	0.43	49313
	Nov. 2	"	49314	D. M. Tod, Oshawa.	$\frac{1}{2}$ lb.	30		W. G. Patrick, Toronto.	"	0.52	49314

DISTRICT OF LONDON, JNO. TALBOT, INSPECTOR.

	Oct. 23	Coca-Cola	47855	Fawkes & Son, London.	12 oz.	25		Coca-Cola, Co., Toronto.	None	0.52	47855
	" 23	"	47856	E. Boomer, London.	12 "	30		" "	"	0.50	47856
	" 23	"	47857	Geo. Peters, London	12 "	30		" "	"	0.56	47857
	" 23	"	47858	R. Willis & Son, London, East.	12 "	25		" "	"	0.72	47858

DISTRICT OF MANITOBA, A. C., LARIVIÈRE, INSPECTOR.

	Nov. 13	Coca-Cola	47474	Julius Bros, Winnipeg.	12 oz.	15	The Coca-Cola, Co., Toronto.	Unknown	None	0.47	47474
	" 13	"	47475	Andrews Drug Store, Winnipeg.	12 "	50	" "		"	0.67	47475
	" 13	"	47476	The Gordon Mitchell Drug Co., Winnipeg.	12 "	15		Solds as, Gay-ola	"	0.72	47476
	" 13	"	47477	Olympia Restaurant, Winnipeg.	12 "	20	Unknown	The Bole Drug Co., Winnipeg.	"	0.52	47477
	" 13	"	47478	Alberta Café, Winnipeg.	12 "	35	"	Unknown	"	0.52	47478

BULLETIN No. 232—COCA-COLA.

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).	RESULTS OF ANALYSIS		No. of Sample.
				Quantity.	Cents.	Manufacturer.	Furnisher.		Cocaine.	Caffeine per ounce grains.	

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

1911.												
Nov.	8	Coca-Cola	44001	Cameron Bros., Medicine Hat.	12 oz.	25	Coca-Cola Co., Atlanta, Georgia, N.S.			None	0 50	44001
"	8	"	44002	E. B. Lively, Medic. Hat.	12 "	25	" "			"	0 52	44002
"	8	"	44003	F. B. McKinnon, Med. Hat.	12 "	25	" "			"	0 63	44003
"	14	"	44004	J. Findlay Drug Co., Ltd., Calgary.	12 "	25	" "			"	0 64	44004
"	14	"	44005	F. Rochon, Calgary.	12 "	25	" "			"	0 56	44005

DISTRICT OF NELSON—THOS. PARKER, INSPECTOR.

1911.												
Oct.	19	Coca-Cola	48447	F. R. Waylitt Este, Fernie, B.C.	12 oz.	40	The Coca-Cola Co., Atlanta, U.S.			None	0 56	48447
"	19	"	48448	J. Wood, Fernie, B.C.	12 "	45	" "			"	0 56	48448
"	27	"	48457	S. G. Hunt Este, Rossland	12 "	45	" "			"	0 63	48457
"	28	"	48485	C. H. Bean, Nelson, B.C.	12 "	45	" "			"	0 52	48485
"	28	"	48485	Poole Drug Co., Nelson, B.C.	12 "	50	" "			"	0 69	48485

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

Oct. 17	Coca-Cola	38210	Harrison's Drug Store, Granville St., Vancouver	12 oz.	25	Healy Impt. Co., Vancouver.	None	0 56	38210
" 18	"	38211	Campbell Drug Co., Ltd., Granville St., Vancouver	12 "	45	Coca-Cola Co., To- ronto.	"	0 59	38211
" 18	"	38212	C. V. Orme, 2031 Granville St., Vanc.	12 "	50	Kelly, Douglas, Van- couver.	"	0 72	38212
" 18	"	38213	A. Almond, Granville St., Vancouver.	12 "	50	Donnelly, Watson & Brown, Vancouver	"	0 52	38213
" 18	"	38214	C. A. Hardt, Woods Phar- macy, Vancouver.	12 "	25	Kelly, Douglas, Van- couver.	"	0 45	38214

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

Nov. 20	Coca-Cola	47676	H. A. Lilly, Victoria, B.C.	12 oz.	50	Kelly, Douglas Co., Vancouver.	None	0 72	47676
" 21	"	47677	U. Stramatares, Victoria, B.C.	12 "	50	Geo. Carter, Victo- ria, B.C.	"	0 60	47677
" 21	"	47678	A. Bancroft, Victoria, B.C.	12 "	50	Kelly, Douglas Co., Vancouver.	"	0 52	47678
" 22	"	47679	Harcop & Antipas, Vic- toria, B.C.	12 "	50	The Healy Imp. Co., Vancouver.	"	0 43	47679
" 22	"	47680	Ivils Pharmacy, Victoria, B.C.	12 "	50	Nat. Drug and Chem. Co., Victoria, B.C.	"	0 56	47680