ANNUAL REPORT, 1960.

DEPARTMENT OF THE GOVERNMENT ANALYST.

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GENERAL

The number of samples and exhibits submitted for analysis during the year amounted to 6,436, distributed as follows:-

		Number of Articles	
A. Health:			
(a)	Under the Food and Drugs Ordinance:	1,482	
(b)	Under the Pharmacy and Poisons Ordinance:	2	
(c)	Under the Coconut Products Ordinance:	39	
(d)	Survey of the variations in the composition of the milk of some cows fed entirely on grass:	93	
(e)	For Potable Water Supplies:	187	
(f)	Hospital Cases:	8	1,811
B. Industry and Commerce:			
(a)	Customs and Excise Duties:	2,391	
(b)	Royalties:	31	
(c)	Certification under the Spirits Ordinance:	113	
(d)	Breaches of the Spirits Ordinance, the Intoxicating Liquors Licensing Ordinance and the Customs Ordinance:	932	
(e)	The Soap Ordinance:	39	
(f)	Sundry Consultations:	340	3,846
C. Criminal Investigations:		779	779
		TOTAL:	6,436

A - HEALTH

2. The contribution of the department to the Health Programme of the country lies in the fields of Foods, Drugs and Waters and this is expected to extend to Sewage and Trade Effluents in the near future. The year 1960 is notable for three events in the fields of foods, drugs and waters:-

(1) The initiation of a scheme of monitoring of the quality of potable water supplies in rural areas,

(2) The amendment of the Pharmacy and Poisons Ordinance, 1956, by the Pharmacy and Poisons (Amendment) Ordinance, 1960; and

(3) The submission of the Report of the Committee appointed to revise the Food and Drugs Ordinance, Chapter 144,

and a not inconsiderable demand was made on the services of the department in pursuance of these.

POTABLE WATER SUPPLIES:

3. With the transfer of the control of the Potable Water Supply Scheme to the Ministry of Health, attention is now directed to the sustained fitness of sources of supply of potable waters; and a programme of chemical and bacteriological examination was initiated in the latter part of August. This department is required to carry out the chemical analyses.

4. 142 samples of well waters were submitted by the Health Engineer, 24 samples of mixed surface and well waters were submitted by the Georgetown Municipality, 2 samples of creek water by the Director of Medical Services, 11 samples of well water by the Drilling Superintendent, 4 samples by the Geophysicist-Hydrologist and 4 samples by the Public Works Department. The quality of the various waters examined is shown in Tables A to G.

A. Artesian Wells on the Essequibo Coast and Islands:

	COLOUR (Hazen Units)	pH Value	Parts per Million: AMMONIA (free & saline)	AMMONIA (albuminoid)	OXYGEN ABSORBED	NITRATE NITROGEN	NITRITE NITROGEN	TOTAL SOLIDS	VOLATILE SOLIDS	FIXED SOLIDS	ALKALINITY (as $CaCO_3$)	ACIDITY (as CO_2)	TOTAL HARDNESS	CHLORINE in CHLORIDES	FLUORINE in FLUORIDES	IRON
Essequibo Coast:																
Charity	20	6.2	1.2	0.08	0.05	1.0	nil	275	35	240	94	67	52	81	0.4	4.5
New Road Charity	40	6.2	1.72	0.01	1.25	0.1	nil	285	30	255	100	53	50	94	0.4	8.0
Better Success	18	6.5	1.64	0.12	1.4	0.1	nil	330	40	290	98	69	76	101	0.6	9.0
Dartmouth	4	6.6	0.86	0.06	0.5	0.1	nil	265	35	230	106	41	52	68	0.4	5.5
Devonshire Castle	80	6.6	0.5	0.1	0.3	0.1	nil	240	40	200	121	23	32	46	0.6	3.0
Danielstown	20	6.5	0.54	0.1	0.9	1.7	nil	225	50	175	110	44	44	69.5	0.2	4.0
La Belle Alliance	120	6.2	0.4	0.1	1.8	nil	nil	195	40	155	68	41	26	59	0.4	5.0
Anna Regina	5	6.6	0.52	0.12	0.1	1.8	nil	225	55	170	87	29	48	74	0.2	2.5
Queenstown	15	6.2	0.3	0.04	0.8	nil	nil	155	25	130	49	53	30	37	0.2	3.0
Queenstown	5	6.6	0.18	0.08	0.3	1.3	nil	180	40	140	85	22	78	42	0.2	0.6
Cullen	15	6.8	0.04	0.4	0.5	nil	nil	245	30	215	97	37	56	82	0.4	4.5
Zorg	120	6.4	0.4	0.1	1.95	nil	nil	290	20	270	86	47	24	101	0.6	5.5
Onderneeming	3	5.6	0.4	0.12	0.3	1.0	nil	225	45	180	35	65	40	88	0.2	3.0
Huis T'Dieren	5	6.2	0.76	0.1	0.4	nil	nil	220	55	165	17	16	32	89	0.2	3.5
Good Hope	10	6.2	0.38	0.08	1.7	nil	nil	175	45	130	40	63	40	67	0.6	9.0
Wakenaam:																
Arthurville	140	6.8	2.7	0.16	1.4	nil	nil	235	45	190	156	40	34	38	0.8	5.0
Maria Johanna	240	6.8	3.6	0.12	1.9	nil	nil	290	50	240	174	36	40	58	0.8	8.0
Sans Souci No.1	240	6.4	1.6	0.04	3.1	nil	nil	310	55	255	98	75	76	104	0.2	12.0
Caledonia	80	6.6	0.6	0.08	0.45	nil	nil	240	30	210	120	37	24	61	0.8	3.5
Leguan:																
Doorn Haag	30	6.4	1.2	0.06	0.3	1.1	nil	155	25	130	101	40	26	34	0.4	2.5
Enterprise	10	6.8	0.3	0.06	0.3	nil	nil	120	10	110	85	28	30	19	0.2	0.6
Richmond Hill	20	6.6	1.2	0.06	0.3	0.8	nil	170	30	140	117	37	22	31	0.4	1.0
Canefield	5	6.4	0.7	0.08	0.3	2.3	nil	130	20	110	89	34	20	19	0.2	1.2
Success	40	6.4	1.3	0.07	0.6	1.0	nil	140	15	125	85	35	32	27	0.4	4.0

5. As was anticipated some difficulty was encountered in the case of waters from distant sources. Difficulties also arose in the early stages when collectors had not fully appreciated the importance of speed in delivery of samples. Forty-one samples of water were found to have undergone marked change during delivery to the laboratory and were not analysed. Some of these samples were taken from the following places: Jacklow, Diamond (Pomeroon), Danielstown, Anna Regina, Onderneeming, Makeshift, Aurora, Zeelandia, Noitgedacht, Sans Souci, Ridge, Louisiana, La Bagatelle, Hubu, Parika, Hyde Park, Uitvlugt, Belvedere, Port Mourant, Paradise, Whim, No.57 Village, Springlands and No.70 Village; but there were others within easier reach of Georgetown which might have been sampled nearer to the time of delivery to the laboratory, as in the case of samples from the following places: Kitty, Ogle, La Bonne Intention, Beterverwagting, Garyville, Mon Repos, Triumph, Enmore, Clonbrook, Mahaica, Good Hope, Two Friends, Cane Grove, DeHoop and Supply.

B. Artesian Wells in the Essequibo-Demerara Peninsula:

	Parts per million															
	COLOUR (Hazen Units)	p^H Value	AMMONIA (free & saline)	AMMONIA (albuminoid)	OXYGEN ABSORBED	NITRATE NITROGEN	NITRITE NITROGEN	TOTAL SOLIDS	VOLATILE SOLIDS	FIXED SOLIDS	ALKALINITY (as $CaCO_3$)	ACIDITY (as CO_2)	TOTAL HARDNESS	CHLORINE in CHLORIDES	FLUORINE in FLUORIDES	IRON
East Bank Essequibo:																
Parika Creek	30	6.4	1.2	0.16	0.4	nil	nil	155	25	130	83	46	52	250	0.4	11.0
Greenwich Park	10	6.3	nil	0.06	0.8	nil	nil	110	20	90	76	46	38	230	0.4	3.5
Philadelphia	15	6.8	0.02	nil	0.1	nil	nil	140	35	105	83	15	42	230	0.2	1.0
Vergenoegen	10	6.4	0.6	0.06	0.25	nil	nil	125	30	95	73	26	28	230	0.2	2.0
Tuschen	5	6.4	0.6	0.04	0.5	nil	nil	125	25	100	84	32	26	280	0.2	2.0
West Coast Demerara:																
Metenmeerzorg	15	6.6	0.6	0.1	0.05	1.0	nil	115	25	90	76	20	20	16	0.4	1.5
Uitvlugt	15	7.2	0.1	0.14	0.1	2.0	nil	125	35	90	76	5	20	13	0.4	1.3
Stewartville	15	6.4	0.4	0.02	0.3	0.5	nil	105	20	85	79	37	22	14	0.2	3.0
Leonora	10	6.4	0.46	0.04	0.35	nil	nil	105	10	95	79	38	18	15	0.2	2.0
Leonora	10	6.4	0.46	0.04	0.5	2.6	nil	105	10	95	79	38	18	15	0.2	2.5
Leonora	4	6.4	0.42	0.04	0.5	nil	nil	110	15	95	77	35	18	16	0.4	2.5
Anna Catherina	4	6.4	0.38	0.02	0.5	nil	nil	110	20	90	81	35	18	16	0.4	2.5
Cornelia Ida	10	6.4	0.34	0.04	0.4	nil	nil	110	25	85	80	35	16	13	0.2	2.5
Hague	5	6.4	0.44	0.02	0.5	nil	nil	135	20	115	84	42	24	20	0.4	3.0
Den Amstel	5	6.4	0.32	nil	0.5	nil	nil	120	25	95	80	35	22	15	0.2	3.0
La Jalousie	5	6.4	0.3	0.02	0.3	nil	nil	115	35	80	80	33	20	18	0.4	2.0
Best Village	10	6.8	0.3	0.06	0.2	1.0	nil	195	35	160	128	19	10	12	0.4	0.7
Best Village	40	6.9	0.4	0.12	0.7	nil	nil	175	5	170	132	14	16	14	0.6	2.0
Best Hospital	10	6.8	0.26	0.04	nil	2.6	nil	105	25	80	62	11	12	9	0.4	1.1
Best Hospital	80	6.4	0.34	0.02	0.3	nil	nil	130	30	100	86	26	28	10	0.4	2.5
Best Hospital	20	6.6	0.3	0.08	0.3	nil	nil	85	35	50	60	18	14	8	0.4	1.2
Vreed-en-Hoop	10	6.8	0.04	0.08	0.3	nil	nil	80	30	50	53	9	12	8	0.4	0.8
Vreed-en-Hoop	10	6.6	0.06	0.02	0.1	nil	nil	100	30	70	62	19	14	9	0.2	0.6
West Bank Demerara:																
Pouderoyen	30	6.4	0.22	0.02	nil	nil	nil	100	35	65	58	31	14	10	0.2	0.4
Versailles	80	7.8	0.3	0.08	0.35	nil	nil	85	40	45	48	3	16	6	0.4	2.5
Goed Fortuin	5	6.4	0.38	0.08	0.7	nil	nil	70	20	50	58	35	20	7	0.8	4.0
La Grange	10	6.4	0.08	0.02	0.3	nil	nil	80	20	60	52	18	22	7	0.4	1.6
L' Oratoire	4	6.3	0.34	0.08	0.5	nil	nil	65	15	50	52	32	16	7	0.8	3.5
Good Hope (No1 Canal)	10	6.4	0.28	nil	0.45	nil	nil	75	5	70	56	28	24	6	0.2	3.5
Bagotsville	10	6.6	0.18	0.02	0.1	1.5	nil	85	35	50	50	16	20	7	0.2	0.8
La Retraite	5	6.4	0.36	0.02	0.55	0.4	nil	70	40	30	45	33	12	5	0.4	3.5
North Section (No2 Canal)	4	6.5	0.32	0.04	0.45	1.0	nil	80	40	40	55	20	22	7	0.4	4.0
New Annlegt (No2 Canal)	8	6.6	0.24	0.06	0.5	0.5	nil	90	35	55	59	22	18	7	0.4	2.5
Wales	10	6.1	0.26	0.08	0.28	1.0	nil	60	15	45	29	22	10	4	0.2	1.2
Patentia	5	6.2	0.3	0.08	0.4	1.7	nil	65	40	25	33	28	14	1.0	0.2	1.2

C. Artesian Wells in the Demerara-Berbice Peninsula:

	Parts per Million															
	COLOUR (Hazen Units)	pH Value	AMMONIA (free & saline)	AMMONIA (albuminoid)	OXYGEN ABSORBED	NITRATE NITROGEN	NITRITE NITROGEN	TOTAL SOLIDS	VOLATILE SOLIDS	FIXED SOLIDS	ALKALINITY (as $CaCO_3$)	ACIDITY (as CO_2)	TOTAL HARDNESS	CHLORINE in CHLORIDES	FLUORINE in FLUORIDES	IRON
Newtown, Kitty	4	6.4	0.34	0.02	0.1	nil	nil	95	25	70	60	30	28	7	0.2	3.5
Subryanville	50	6.4	0.29	0.04	nil	nil	nil	100	35	65	62	20	20	7	0.2	1.4
Bel Air	4	6.2	0.3	0.06	nil	1.5	nil	80	20	60	51	30	10	7	0.2	1.4
Lilliendaal	10	6.3	0.3	0.06	0.05	1.0	nil	90	35	55	48	30	14	2	0.2	2.[illegible]
Sparendaam	30	6.3	0.34	0.04	0.85	nil	nil	100	30	70	62	30	20	7	0.2	5.[illegible]
Plaisance	30	6.4	0.44	0.08	0.55	nil	nil	110	30	80	60	30	22	6	0.2	4.0
Vryheid's Lust	4	6.2	0.3	0.04	nil	nil	nil	55	10	45	42	32	10	6	0.2	2.[illegible]
Success	4	6.2	0.3	0.08	0.5	nil	nil	70	15	55	44	33	14	8	0.2	3.[illegible]
Lusignan	5	6.2	0.24	0.04	0.3	nil	nil	75	15	60	46	47	22	10	0.4	4.0
Annandale	5	6.2	0.26	nil	0.4	nil	nil	80	15	65	46	47	18	13	0.4	4.[illegible]
Buxton	40	6.2	0.36	0.06	0.7	nil	nil	80	15	65	56	40	30	10	0.4	8.[illegible]
Friendship	20	6.2	0.3	0.02	0.7	nil	nil	70	15	55	54	44	24	9	0.4	6.0
Non Pareil	5	6.2	0.24	0.02	0.65	nil	nil	80	20	60	49	48	22	13	0.4	5.[illegible]
Bachelor's Adventure	5	6.2	0.34	0.02	0.8	nil	nil	70	20	50	49	50	26	15	0.4	4.0
Hope	4	6.2	0.3	nil	0.7	nil	nil	55	20	35	32	47	16	13	0.4	6.0
Enmore	4	5.9	0.26	0.02	0.65	1.0	nil	60	15	45	32	36	10	8	0.2	3.5
Nabaclis	80	6.6	0.6	0.04	0.15	1.0	nil	170	25	145	76	29	6	29	0.2	3.5
Victoria	5	6.0	0.34	0.06	0.6	2.0	nil	70	30	40	36	46	14	9	0.2	3.0
Strangroen	5	6.4	0.28	0.06	1.15	1.3	nil	65	5	60	50	33	20	5	0.4	6.0
Rebecca's Lust	5	6.4	0.34	0.02	1.0	nil	nil	60	10	50	37	35	10	5	0.4	4.5
De Kinderen	10	6.3	0.26	0.04	0.9	0.5	nil	65	15	50	34	28	14	4	0.4	4.0
Drill	5	6.3	0.2	0.02	0.75	0.5	nil	60	20	40	34	30	18	4	0.4	3.0
Farm	nil	6.1	0.24	0.04	0.7	2.3	nil	70	15	55	36	35	14	6	0.4	4.0
Perth	40	6.6	0.3	0.04	0.4	0.3	nil	135	30	105	68	31	32	4	0.4	3.0
Wash Clothes	40	6.6	0.32	0.06	0.45	1.4	nil	145	35	110	71	31	32	4	0.4	4.0
Burma	2	7.0	0.01	0.01	0.15	1.0	nil	65	5	60	33	4	18	1	0.4	nil

6. Monthly analyses of the Georgetown Water Supply were continued during the year and the relevant data are given in Table F. It has been appreciated from the outset that an examination of similar frequency cannot be carried out at this time on each of the wells along the coast but from the data available a selection of wells for more frequent examination is suggested, and it is hoped that a start would be possible before the completion of the first cycle of the survey of all the wells which number more than 200.

D. Artesian Wells in the Berbice-Corentyne Peninsula:

	COLOUR (Hazen Units)	pH Value	Parts per Million: AMMONIA (free & saline)	AMMONIA (albuminoid)	OXYGEN ABSORBED	NITRATE NITROGEN	NITRITE NITROGEN	TOTAL SOLIDS	VOLATILE SOLIDS	FIXED SOLIDS	ALKALINITY (as $CaCO_3$)	ACIDITY (as CO_2)	TOTAL HARDNESS	CHLORINE in CHLORIDES	FLUORINE in FLUORIDES	IRON
Fryish	4	6.2	0.18	.04	0.1	nil	nil	60	15	45	48	40	28	6	.2	4.5
Rose Hall	15	6.0	0.16	.02	nil	2.6	nil	65	25	40	36	42	14	9	.4	1.5
Miss Phoebe	50	6.9	0.16	.04	nil	nil	nil	105	10	95	43	5	38	38	.2	1.8
Tain	15	6.4	0.24	.04	nil	nil	nil	85	15	70	65	25	26	6	.2	1.8
Limlair	4	6.2	0.3	.04	0.1	2.0	nil	80	25	55	54	35	16	12	.4	2.5
Bush Lot	10	6.8	0.08	nil	nil	nil	nil	85	25	60	55	12	24	7	.2	0.9
Cromarty	10	6.7	0.6	.04	.05	0.5	nil	140	25	115	89	23	20	8	.2	0.9
Haversham	15	6.4	0.3	nil	0.1	nil	nil	80	20	60	68	35	16	7	.2	2.0
No. 42	10	6.4	0.3	.06	.05	1.0	nil	70	15	55	68	35	16	7	.2	1.5
No. 47	4	6.4	0.2	.02	.25	nil	nil	105	15	90	63	31	12	10	.4	1.2
No. 48	4	6.4	0.16	.02	.2	nil	nil	110	15	95	65	34	10	11	.4	0.6
No.53-Union	15	6.4	0.12	.02	.15	1.5	nil	90	10	80	55	20	12	5	.4	0.9
Skeldon (over-head tank)	5	7.2	0.01	.1	.35	nil	nil	410	25	385	139	8	28	149	.4	0.5
Skeldon (line-path)	5	7.2	0.4	.04	.2	nil	nil	560	20	540	133	10	12	250	.4	0.5
Crabwood Creek	5	8.0	0.16	.01	1.0	nil	.02	335	25	310	207	.5	20	25	.4	0.3

E. Quality of Waters obtained during the course of drilling:

	pH Value	Parts per Million: AMMONIA (free & saline)	AMMONIA (albuminoid)	TOTAL SOLIDS	VOLATILE SOLIDS	FIXED SOLIDS	ALKALINITY	ACIDITY	TOTAL HARDNESS	CHLORINE	FLUORINE	IRON
Jacklow 26'-34'	6.2	1.5	0.07	1216	422	794	120	78	-	386	-	22.5
Jacklow 182'-228'	6.0	0.16	002	712	165	547	39	101	-	193	-	10.5
Tiger Island 26'-34'	6.9	excessive	0.8	8606	2680	5926	700	170	-	3980	-	70
Tiger Island 238'-280'	5.4	0.88	0.08	265	75	190	20	78	46	107	0.2	6.0
Lesbeholden 95'-105'	5.9	-	-	518	30	488	54	73	38	121	0.4	6.0
Lesbeholden 139'-144'	6.7	-	-	312	52	260	116	40	38	63	0.4	2.5

F. Monthly Variation of Georgetown Supply.

	Parts per Million										
	pH Value	AMMONIA (free & saline)	AMMONIA (albuminoid)	TOTAL SOLIDS	VOLATILE SOLIDS	FIXED SOLIDS	ALKALINITY (as $CaCO_3$)	ACIDITY (as CO_2)	CHLORINE in CHLORIDES	FLUORINE in FLUORIDES	IRON
Shelter Belt:											
January	6.9	0.4	0.01	89	21	68	28	6	9	0.3	0.35
February	6.9	0.6	0.14	103	17	86	25	5	9.5	0.3	0.25
March	6.9	0.5	0.18	86	20	66	25	3	9.5	0.4	0.25
April	6.9	0.3	0.09	110	32	78	30	2.5	9	0.3	0.35
May	7.2	0.3	0.05	127	35	92	29	2	10	0.2	0.2
June	6.7	0.2	0.05	92	23	69	17	8	7	0.2	0.35
July	6.9	0.4	0.15	94	33	61	25	3	8	0.3	0.3
August	6.8	0.2	0.10	74	14	60	20	3	7	0.3	0.00
September	7.2	0.2	0.08	72	6	66	25	1	6	0.2	0.4
boosted by deep well water: October	7.0	0.4	0.08	114	26	88	43	4	18	0.2	0.4
boosted by deep well water: November	6.9	0.2	0.10	104	30	74	39	6	17	0.2	0.2
boosted by deep well water: December	6.8	0.3	0.10	108	14	94	40	9	17	0.2	0.2
New deep well boosting the Surface Water Supply:	8.0	0.3	0.02	355	25	330	200	nil	88	0.8	0.2
Scattered Points in the Distribution System:											
January - Queenstown	6.9	0.05	0.03	88	17	71	28	6	9	0.3	0.35
February - Bourda	7.0	0.44	0.10	100	16	84	25	5	9.5	0.3	0.25
March - Lacytown	6.9	0.24	0.10	84	22	62	25	3	9.5	0.4	0.3
April - Stabroek	7.4	0.20	0.09	108	22	86	34	15	9	0.3	0.35
May - Stabroek	6.8	0.22	0.05	128	32	96	22	6	12	0.2	0.12
June - Wortmanville	6.8	0.15	0.06	90	25	65	15	5	7	0.2	0.3
July - Charlestown	6.9	0.25	0.20	96	38	58	25	3	8.5	0.3	0.45
August - Albouystown	7.0	0.08	0.04	80	26	54	26	2	8	0.3	0.12
September - Kingston	7.2	0.16	0.08	76	12	64	26	1	6	0.2	1.2
boosted by deep well water: October - Cummingsburg	7.2	0.04	0.12	140	24	116	56	4	24	0.2	1.0
boosted by deep well water: November - Cummingsburg	7.1	0.05	0.09	138	28	110	62	3	29	0.2	0.5
boosted by deep well water: December - Lacytown	7.0	0.07	0.10	152	14	138	62	7	30	0.2	0.4

G. Other Sources of Water:

	Parts per Million								
	pH Value	AMMONIA (free & saline)	AMMONIA (albuminoid)	TOTAL SOLIDS	VOLATILE SOLIDS	FIXED SOLIDS	ALKALINITY (as $CaCO_3$)	ACIDITY (as CO_2)	CHLORINE in CHLORIDES	IRON
Wismar Pumping Station:	6.0	0.04	0.24	72	16	56	8	15	5	1.0
Creek Water, 1¼ miles Potaro Rd	6.0	nil	0.14	35	7	28	20	16	35	1.0
Creek Water, 3½ miles Potaro Rd:	6.2	0.06	0.14	28	6	22	15	7	35	0.6
Creek Water, Atkinson Field, Raw:	5.8	0.16	0.10	42	-	-	19	29	6	3.5
Creek Water, Atkinson Field Treated:	7.8	0.04	0.02	54	-	-	35	1	9	0.25
Creek Water, P.W.D:	6.0	0.13	nil	76	34	42	25	35	3	0.65
Creek Water, P.W.D:	9.5	nil	0.2	440	115	325	202	nil	5	1.1

FOODS AND DRUGS:

7. As has been indicated in previous reports, the Food and Drugs Ordinance, Chapter 144, is inadequate to deal with the proper control of the trade in foods and drugs under modern conditions. A Revisal Committee was appointed by the Minister of Labour, Health and Housing on the 8th February, 1958, and the onus of piloting the Committee through the decisive stages of its revision fell to the department with the appointment of the Government Analyst as Chairman on the 1st October, 1960. The Report of the Committee was submitted to the Ministry of Health on the 8th November, 1960.

8. Work in the Food Laboratory was adversely affected by staff deficiency. The composition of the staff complement in the Food Laboratory at various periods during the year was as follows:-

Jan - Feb:	One Scientific Officer:	one month's experience
	One Grade B Technical Assistant:	14 years' experience
	One Grade B Technical Assistant:	one month's experience
	One Grade C Technical Assistant:	4 years' experience
	One Grade C Technical Assistant:	one month's experience.
Mar - May:	Reduction of above staff by the transfer of the senior Grade B officer to the Revenue Division.	
June:	One Grade A Technical Assistant:	16 years' experience
	One Grade B Technical Assistant:	6 months' experience
	One Grade C Technical Assistant:	6 months' experience
	One Grade C Technical Assistant:	(on sick leave and local leave).
July:	As in June but one Grade C Technical Assistant of no previous experience was recruited.	

Aug - Sept: One Scientific Officer: new recruit
One Grade B Technical Assistant: 8 months' experience
One Grade C Technical Assistant: 8 months' experience
One Grade C Technical Assistant: one month's experience
[The Grade A Technical Assistant was transferred to the Water Division and the senior Grade C Technical Assistant proceeded on vacation leave.]

Oct - Dec: One Scientific Officer as above.
One Grade C Technical Assistant: 2 months' experience.
[The Grade B and Grade C Technical Assistants recruited in 1959 proceeded to the U.C.W.I. at the end of September.]

9. Samples amounting to 1,521 were submitted under the Food and Drugs and the Coconut Products (Control) Ordinances as shown in Table H. Outstanding samples at the end of the year amounted to 136. Sub-standard samples amounted to 580, of which -

(1) 17 samples of coffee were found to be adulterated,
(2) 25 samples of deodorised coconut oil were falsified,
(3) 12 samples of deodorised coconut oil contained excessive free fatty acids,
(4) one sample of ghi was falsified,
(5) one sample of lard substitute was found to be rancid,
(6) 252 samples of milk were found to be fat deficient,
(7) 403 samples of milk were found to be deficient in milk solids other than fat,
(8) 201 samples were found to be adulterated with water,
(9) two samples of soya bean oil were found to be falsified, and
(10) two samples of sugar were deficient in sucrose.

Table H

	Police Dept.	Medical Dept.	Municipality G'town	Municipality N.A.	Vendor's	Total
*Aerated Drinks:	5	5	-	-	-	10
*Bovril:	-	1	-	-	-	1
Butter:	12	12	4	-	-	28
Coffee:	54	24	4	-	-	82
*Coffee Extract:	-	3	-	-	-	3
Coffee Substitute:	1	-	-	-	-	1
Crude Coconut Oil:	1	-	-	-	-	1
Deodorised Coconut Oil:	91	29	-	-	-	120
Ghi:	4	2	-	-	-	6
Ghi Substitute:	1	-	-	-	-	1
*Honey:	14	16	-	-	-	30
Lard Substitute:	14	11	-	-	-	25
*Marmite:	-	1	-	-	-	1
Milk:	526	367	101	88	56	1138
*Packaged Soups:	-	32	-	-	-	32
*Sausages:	-	6	-	-	-	6
Soya Bean Oil:	9	2	-	-	-	11
Sugar:	11	9	4	-	-	24
Vinegar:	1	-	-	-	-	1
TOTAL:	744	520	113	88	56	1521

* The samples marked with an asterisk were submitted informally in the course of a general survey of articles for which no legal standards have been prescribed.

10. Aerated Drinks: There are now 31 aerated water factories registered with the department. Having regard to the fact that the population of the country is only about one-half of a million, some idea can be gained of the part played by these drinks as an article of food in this country. The cost to the consumer is about 16 cents per pint which is about the same as that of milk. The nutritional ingredient in the average aerated drink is cane-sugar, 2½ ozs in each pint of drink, i.e., 1 cent of cane-sugar in every 16 cents of drink. It follows therefore that 93.75% of the cost to the consumer of aerated drinks lies in paying for artificial flavours, preservative, gas, bottles, labels, crown corks and the preparation and distribution of the drinks. These facts may no doubt serve as a basis for sober reflection.

11. Some progress has been observed in labelling since the department circularised factories regarding the use of names such as Orange Crush, Lemon Squash, Pineapple Crush, etc. in cases where the relevant fruit juices have not been used, as a number of manufacturers have adopted our suggestion to use the names Orange Flavour, Lemon Flavour, etc., and to discontinue the practice of unjustifiably including pictures of the fruits on the labels. Consideration has also been given to the fact that if there is no difference in connotation between the trade names "Juicee" and "Ju-C", then both of these spellings can be taken to imply "Juicy" and a justifiable content of fruit juice must therefore be expected to be present in drinks under such trade names. It remains to be specified in the law what minimal contents of fruit juices would be considered justifiable and what nutritional claims can be permitted in advertisements.

12. Tidying up in the field of preservatives used in aerated drinks is expected when a revised ordinance comes into force. A large proportion of manufacturers have been persuaded to use sodium benzoate instead of salicylic acid as a preservative but a new malpractice has arisen by the export to this country of preparations of preservative inadequately labelled to allow manufacturers to cooperate intelligently and economically with the department pending the enactment of regulations relating to the use of preservatives in foods.

13. Sugar: Unrefined cane-sugar is the sweetening agent widely used in this country. Complaints have appeared from time to time in the local press regarding the sale of dirty sugar, but samples of such sugar have never been submitted to the department for confirmation of the complaints made, nor have the sources of supply been divulged to us.

14. The analysis of 24 samples of sugar submitted during the year under the Food and Drugs Ordinance gave the following results:-

Table I

Sample No.	Sucrose	Ash	Dirt
Unrefined Sugar:			
1	94.8%	0.31%	0.04%
2	98.5%	0.41%	0.03%
3	94.6%	0.32%	0.03%
4	98.0%	0.42%	0.04%
5	94.5%	0.29%	0.03%
6	94.4%	0.52%	0.03%
7	92.0%	0.33%	0.005%
8	96.4%	0.36%	0.27%
9	96.6%	0.63%	0.07%
10	96.8%	0.20%	0.02%
11	95.6%	0.33%	0.04%
12	96.4%	0.43%	0.05%
13	95.6%	0.37%	0.05%
14	97.4%	0.35%	0.04%
15	96.0%	0.36%	0.04%
16	95.0%	0.40%	0.04%
17	97.2%	0.24%	0.008%
18	95.0%	0.29%	0.04%
19	94.0%	0.33%	0.06%
20	90.4%	0.32%	0.02%
21	95.2%	0.53%	0.05%
22	96.8%	0.41%	0.13%
23	94.0%	0.46%	0.05%
White Sugar:			
1	99.8%	0.02%	0.08%

The legal standards for unrefined cane-sugar or dark crystal sugar are:-

(i) Not less than 94% of sucrose by polarisation and

(ii) Not more than a total of 2½% of mineral and organic matters other than sugar.

Two samples of sugar were therefore found to be below the legal standard in respect of their sucrose content. The existing Food and Drugs Ordinance does not prohibit the presence of dirt in sugar although section 3 of the ordinance prohibits the deliberate addition to any food of any ingredient that makes the food injurious. Proof of deliberate addition is of course a most difficult matter and the legal line of demarcation of safety of a food should not coincide with that where injury commences. A discussion of safety factors in food standards is given in the Report of the Revisal Committee of the Food and Drugs Ordinance.

15. Honey: In considering what standards should be adopted for honey, there was a stronginitial leaning towards recommending the Canadian maximum limit of 8% of

sucrose in honey having regard to the fact that this is a sugar-producing country where bees are known to obtain supplies of cane-sugar from readily-available sources; it is to the Credit of the British Guiana Bee-keepers Association that they have asked for greater stringency in the limit of sucrose. Samples of honey were therefore taken from various parts of the country for analysis, with results as shown in Table J; and in view of these a maximum limit of 3% of sucrose was considered to be reasonable in the first instance. When staff conditions improve, it is proposed to resume the survey.

Table J - Honeys.

Samples	Moisture %	Ash %	Sucrose %	Total Reducing Sugars (calc.as Invert Sugar%)
1	14.2	0.27	1.48	78.58
2	23.9	0.64	2.92	75.15
3	17.09	0.76	2.69	71.73
4	16.75	0.35	1.31	71.95
5	15.55	0.32	2.39	74.44
6	15.70	0.23	2.42	71.91
7	15.53	0.24	0.88	75.93
8	15.47	0.26	0.57	76.43
9	15.21	0.45	2.97	72.31
10	19.17	0.51	0.85	74.33
11	15.96	0.74	1.62	71.57
12	19.14	0.21	1.66	73.94
13	17.7	0.35	1.38	74.52
14	17.56	0.35	2.04	75.23
15	19.25	0.29	1.17	74.61
16	17.13	0.35	2.01	75.59
17	18.52	0.29	0.82	76.04
18	16.24	0.19	0.85	76.67
19	17.83	0.22	1.19	76.97
20	17.50	0.27	2.47	75.52
21	14.45	0.41	0.93	74.04
22	18.46	0.15	2.30	76.69
23	16.80	0.74	1.73	73.37
24	18.50	0.17	2.09	73.10
25	17.70	0.13	1.42	76.07
26	17.50	0.17	0.44	78.06
27	16.60	0.17	0.76	80.00

16. Milk: The samples of milk submitted under the Food and Drugs Ordinance represent raw milk sold in various parts of the Coastlands. As in the case of potable waters, rapid transport to the laboratory is essential. 206 samples, i.e., 18.7% of the total submitted by sampling officers, arrived at the department in a curdled state. Of 896 samples

analysed, the distribution of composition of milks sold mainly in the rural areas was found to be as follows:-

(a) In respect of Milk-fat:

Table K

Range of fat content:	Number of Samples in the range
below 2.0%	6
2.0% to 2.4%	42
2.5% to 2.9%	86
3.0% to 3.4%	235
3.5% to 3.9%	232
4.0% to 4.4%	159
4.5% to 4.9%	76
5.0% to 5.4%	39
above 5.0%	21

(Average fat content of samples = 3.7%)
(Legal minimum = 3.25%)

(b) In respect of Milk Solids other than Fat:

Table L

Range of Content of Solids other than fat	Number of Samples in the range
under 6.0%	11
6.0% to 6.4%	10
6.5% to 6.9%	22
7.0% to 7.4%	59
7.5% to 7.9%	92
8.0% to 8.4%	209
8.5% to 8.9%	213
9.0% to 9.4%	202
9.5% to 9.9%	57
10.0% to 10.4%	16
over 10.4%	5

(Average content of milk solids not fat = 8.9%)
(Legal minimum = 8.5%)

17. Although we have progressed a long way from the state of affairs in 1891 when 100% of the samples examined were found to be adulterated, the position in 1960 can hardly be described as satisfactory when the incidence of adulteration of an important article like milk is found to be 22.4 per cent, assuming that the sampling done by the legal samplers is representative of the milk on sale. An estimate of the significance of adulteration in the liquid milk trade may be made from Table M if the volume of milk sold in each range can be ascertained.

Table M

Amount of Added Water	Frequency of Occurence per 1000 samples	Real Cost to consumer of each pint of genuine milk.
5 to 10%	108	15.8 to 16.7 cents
11 to 20%	81	16.8 to 18.8 cents
21 to 30%	30	19.0 to 21.4 cents
31 to 40%	3	21.7 to 25.0 cents
41 to 50%	2	25.4 to 30.0 cents

It does appear that the system of imposing fines at the rate of about $1 for every 1% of added water plays an important part in the development of the existing pattern of adulteration. There is now a virtual eradication of the "half and half milk and water" type of adulteration and an evolution of a hardy breed of "five to twenty per centers". As retailers operating in such a range have succeeded in retaining a stable place in the trade for many years, it is evident that an adulteration with 5 to 20% of water must be considered to be a good calculated risk. Some re-thinking is perhaps necessary. Should discretion be exercised in differentiating between mild and gross adulteration or should a crippling assault be led on the very idea of adulteration? Among the 201 samples of milk found to be adulterated with water there were 37 samples which, while they conformed to the legal minima, were nevertheless adulterated with water in amounts ranging from 5 to 12 per cent. No legal action was possible under the existing Ordinance.

18. Various factors affecting the type of legislation necessary in regard to the control of the trade in milk are discussed in the Revisal Committee's Report on Food and Drugs Legislation. The more extensive work on milk samples started in mid-1958 and discontinued when the Food Laboratory was closed down for repairs and improvements, was resumed in 1960 to obtain essential experimental data not available in the colony. To obtain information on the natural variation in composition of genuine milks in the colony it was necessary to obtain the results by a lengthier indirect process of analysis of samples of unknown authenticity submitted under the Food and Drugs Ordinance. It has been found that about 25% of the samples of milk obtained in the market are sub-standard through reasons other than adulteration; on the other hand a high proportion of rich milk is available and a study of the data supplied should be useful in gaining widespread support for the distribution of milk through central supplies.

19. Some indication of the prejudice in nourishment which consumers suffer when milk is bought continuously direct from some

farmers possessing only one or a few cows may be obtained from the following data on sub-standard milks examined:

Table N

Sample No.		% Milk Fat	Lactose %	Protein %	Minerals %	Ratio of lactose: protein: ash:
Average Genuine Milk:		3.6	4.75	3.4	0.75	13: 9: 2
1		3.5	4.03	3.04	0.70	11.5: 8.7: 2
2		3.4	3.86	3.35	0.64	12.1:10.4: 2
3		2.7	4.03	2.77	0.74	10.9: 7.5: 2
4		2.6	2.87	2.8	0.53	10.8:10.5: 2
5		2.1	3.84	2.69	0.70	11: 7.7: 2
6		3.1	3.54	2.19	0.65	10.9: 6.7: 2
7		2.5	3.60	2.70	0.58	12.4: 9.3: 2
8		2.7	3.90	2.60	0.55	14.1: 9.4: 2
9		3.1	4.31	3.13	0.75	11.5: 8.3: 2
10		3.4	4.25	3.39	0.76	11.2: 8.9: 2
11		2.4	3.54	2.96	0.74	9.6: 8: 2
12		3.7	3.81	3.23	0.66	11.6: 9.2: 2
13		2.4	2.39	1.91	0.39	12.2: 9.8: 2
14		2.4	3.03	2.28	0.59	10.2: 7.9: 2
15		3.6	3.59	2.56	0.68	10.5: 7.5: 2
16		2.8	4.15	2.46	0.73	11.4: 6.8: 2
17		2.6	3.92	2.06	0.75	10.4: 5.5: 2
18		3.9	3.74	2.93	0.64	11.7: 9: 2
19		3.4	3.54	2.34	0.61	11.6: 7.6: 2
20		2.9	3.69	3.29	0.78	9.5: 8.4: 2
21		3.1	4.08	1.73	0.60	13.6: 5.8: 2
22		3.1	3.89	3.17	0.68	11.4: 9.3: 2
me Cow A	23 Morning	1.5	4.26	2.49	0.75	11.4: 6.6: 2
	24 Evening	3.8	4.20	2.47	0.74	11.3: 6.6: 2
me Cow B	25 Morning	2.1	4.34	2.89	0.69	12.6: 8.9: 2
	26 Evening	5.6	4.12	2.86	0.69	12.0: 8.8: 2
me Cow C	27 Morning	3.2	4.21	2.59	0.76	11.1: 6.8: 2
	28 Evening	4.9	4.04	2.53	0.74	10.9: 6.8: 2
me Cow D	29 Morning	2.0	4.79	3.38	0.75	12.8: 9: 2
	30 Evening	4.6	4.74	3.11	0.75	12.7: 8.3: 2

A survey of the milk of four cows fed entirely on grass at the Central Agricultural Station was started on the 31st May, 1960, but this was discontinued towards the end of August and has not been resumed on account of staff shortage. Data obtained on the animals are as follows:-

Cow No.1

Breed: ½ Holstein and ½ Creole. Age: 9 years.
Production in 1958: 646.9 gallons for 287 days (average 2.27gals/day)
Last Calving: 19.11.59.
Pregnant: January, 1960.

Date 1960	yield(pints)			% Fat			Lactose%	Protein%	Ash %	Acidity%	Freezing point depression	Averages
	A.M.	P.M.	Total	A.M.	P.M.	day's average						
31.5.	8	4½	12½	2.5	6.7	4.0	3.48	2.46	0.76	0.08	0.531	7th month
2.6.	8½	4¾	13¼	2.4	3.5	2.8	4.19	2.45	0.70	0.09	0.530	
7.6.	8½	5½	14	2.8	4.7	3.5	3.70	2.36	0.82	0.09	0.523	daily):12.5
8.6.	7	4½	11½	3.4	-	-	3.79	2.42	0.82	0.10	0.531	yield):pts.
21.6.	8	4	12	2.8	3.8	3.1	-	-	-	0.11	0.531	fat:3.35%
28.6.	7½	-	-	3.3	-	-	3.88	2.37	0.81	0.09	0.531	s.n.f.:6.99%
30.6.	?	?	?	3.3	3.4	-	3.68	2.47	0.75	0.07	0.531	
5.7.	?	?	?	2.7	3.1	-	4.08	2.65	0.79	0.11	0.534	8th month
12.7.	8½	?	?	3.3	-	-	4.00	2.68	0.76	0.09	0.524	
14.7.	8	?	?	3.0	-	-	3.90	2.60	0.77	0.09	0.530	daily) ?
19.7.	-	4½	-	-	3.7	-	4.45	2.57	0.80	0.11	0.534	yield)
21.7.	9	-	-	2.3	-	-	4.00	2.70	0.80	0.11	0.525	fat: ?
26.7.	8½	-	-	3.2	3.5	-	4.06	2.70	0.80	0.09	0.536	s.n.f.:7.5%
28.7.	?	?	?	3.2	4.0	-	3.98	2.78	0.77	0.09	0.532	
4.8.	4	2	6	3.0	4.1	3.3	3.65	2.45	0.82	0.10	0.533	9th month
9.8.	5	3½	8½	3.4	5.5	4.2	3.85	2.63	0.76	0.11	0.531	
11.8.	6	3	9	2.5	2.6	2.53	4.25	2.45	0.74	0.08	0.529	daily)7.4
18.8.	4½	1½	6	3.1	3.4	3.17	3.90	2.35	0.74	0.07	0.534	yield)pts.
23.8.	5	-	-	3.8	4.7	-	-	2.59	0.89	0.09	0.521	fat:3.3%
												s.n.f.:7.15%

Cow No. 2

Breed: ¾ Holstein and ¼ Zebu. Age: 5½ years.
Production in 1957: 534.3 gallons for 400 days (average:1.33gals/day)
Last Calving: 13.6.59.
Pregnant: March, 1960.

31.5.	2½	-	-	2.9	3.0	-	2.66	3.34	0.64	0.06	0.530	
2.6.	1	-	-	3.2	4.1	-	2.60	3.63	0.75	0.06	0.523	s.n.f.:7.07%
7.6.	3	1	4	3.4	3.6	3.45	2.37	3.95	0.87	0.08	0.537	after correct-
*8.6.	-	2	-	-	3.4	-	2.46	3.44	0.76	0.06	0.476*	ing for adulter-
21.6.	dry	dry	dry									ation.

* contained 10.8% of added water.

Cow No. 3

Breed: Holstein. Age: 9 years.
Production in 1957: 75.3 gallons over 74 days (average:1.02gals/day)
Last Calving: 9.9.59.
Pregnant: 5th May, 1960.

1960	yield(pints)			% Fat			Lactose%	Protein%	Ash %	Acidity	Freezing point depression	Averages
	A.M.	P.M.	Total	A.M.	P.M.	days average						
31.5.	4	2	6	1.6	6.0	3.0	3.72	3.25	0.75	0.08	0.531	9th month
2.6	5	2	7	3.4	4.0	3.5	3.90	3.14	0.76	0.08	0.523	daily)6.3
7.6.	3½	3	6½	3.0	4.9	3.9	3.46	3.50	0.84	0.09	0.530	yield)pts.
8.6.	-	2½	-	-	3.6	-	3.75	3.22	0.72	0.10	0.560	fat:3.47%
21.6.	4	1¾	5¾	2.4	3.0	-	-	-	-	0.11	0.519	s.n.f.:
28.6.	4½	-	-	3.0	-	-	3.75	3.30	0.82	0.11	0.534	7.76%
30.6.	?	?	?	3.8	3.8	-	3.66	3.24	0.77	0.08	0.530	
5.7.	?	?	?	2.3	3.5	-	4.00	3.30	0.81	0.11	0.531	10th month
12.7.	4½	?	-	3.2	-	-	3.81	3.35	0.79	0.10	0.529	daily)6.5
14.7.	4½	?	-	3.6	-	-	3.70	3.40	0.82	0.10	0.517	yield)pts.
19.7.	4½	2½	7	2.9	4.9	3.6	4.34	3.24	0.79	0.09	0.535	fat:3.6%
21.7.	4	?	-	2.6	-	-	3.80	3.30	0.80	0.09	0.522	s.n.f.:
26.7.	3½	2½	6	3.3	4.2	3.6	3.80	3.30	0.80	0.10	0.533	7.85%
28.7.	?	?	?	2.7	3.8	-	3.69	3.34	0.79	0.09	0.530	
4.8.	3	1¾	4¾	3.7	5.5	4.3	3.64	3.41	0.84	0.09	0.521	11th month
9.8.	2½	¾	3¼	3.3	3.7	3.3	3.62	3.15	0.78	0.08	0.521	daily)4.1
11.8.	3	1	4	3.6	3.7	3.6	3.13	3.16	0.77	0.09	0.527	yield)pts.
16.8.	3	¾	3¾	3.6	3.9	3.6	3.10	3.30	0.75	0.09	0.519	fat:3.7%
18.8.	3½	1½	5	3.4	4.3	3.6	3.70	3.14	0.79	0.10	0.520	s.n.f.:
23.8.	3	?	-	3.6	5.5	-	3.80	2.48	0.74	0.08	0.525	7.38%

Cow No. 4

Breed: ½ Holstein and ½ Zebu Age: 16½ years
Production in 1956: 888.6 gallons over 324 days (average:2.74gals/day)
Last Calving: 7.10.59.
Pregnant: December, 1959.

31.5.	4	?	-	3.7	3.9	-	3.67	3.06	0.62	0.08	0.536	8th month
2.6.	4¾	2½	7¼	3.9	5.4	4.4	3.01	3.25	0.73	0.06	0.530	daily) 5
7.6.	2½	1¼	3¾	4.0	5.3	4.4	3.62	3.14	0.80	0.09	0.533	yield)pts.
8.6.	3	1	4	-	5.0	-	3.67	3.09	0.72	0.10	0.509	fat:4.4%
28.6.	2½	?	-	3.9	?	-	3.00	3.22	0.83	0.07	0.540	s.n.f.
30.6.	?	?	?	3.9	?	-	1.95	3.60	0.85	0.05	0.553	7.14%
7.7.	dry											

Four other animals owned by a private farmer and fed on a diet of grass and food concentrate were found to give milk of the following quantity and composition:-

	Age	Period of Lactation	Daily Yield	Fat % A.M.	Fat % P.M.	Lactose %	Protein %	Ash %	Solids not fat
Cow A (Holstein)	6 yrs	5th month	42pts	1.5	3.8	4.23	2.48	0.75	7.4
Cow B (Holstein)	7 yrs	4th month	42pts	2.1	5.6	4.23	2.87	0.69	7.8
Cow C (¾Holstein & ¼ Zebu)	5½yrs	3rd month	42pts	3.2	4.9	4.12	2.56	0.75	7.4
Cow D (¾Holstein & ¼ Zebu)	5½yrs	4th month	42pts	2.0	4.6	4.76	3.24	0.75	8.8

20. Coffee: The incidence of adulteration was found to be 207 per 1000. The principal adulterant was found to be ground, roasted starch (probably rice) but there were a number of samples containing large amounts of ground vegetable tissue foreign to coffee beans. One sample was submitted as "coffee substitute" but although it was really coffee adulterated with roasted starch no legal action could be taken as anything can be called"coffee substitute". It is understood that the use of the name "coffee substitute" by traders is now widespread. There are obvious objections to the use of the term "substitute" in relation to foods, and it is hoped that new legislation would lead to the disappearance of the term from food nomenclature.

21. Sausages: An examination of various brands of sausages sold in the market gave the following results:-

Table N

	Brand No. 1	Brand No. 2	Brand No. 3	Brand No. 4	Brand No. 5	Brand No. 6
Cost:	30¢		27¢			
Declared Net Weight:	4ozs	4ozs	4ozs	4ozs	4ozs	4ozs
Contents packed in:	1oz water	1oz water	1oz water	4ozs brine	4ozs brine	4ozs brine
Weight of drained sausages:	4ozs	4ozs	4ozs	4ozs	4ozs	4ozs
Composition of Drained Sausages:						
Bread or Cereal Filler:	14.76%	23.56%	28.74%	10.26%	10.08%	9.56%
Meat:	54.81%	45.50%	36.62%	54.79%	55.78%	53.90%
Additional Water:	30.43%	30.94%	34.64%	34.95%	34.14%	36.54%
	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

(1) All of the above samples fail to conform to the Canadian standard.

(2) Samples Nos. 2 and 3 do not conform to the United Kingdom standard or to the standard recommended by the Committee appointed to revise the Food and Drugs Ordinance.

(3) Samples Nos. 1 and 3 do not conform to the standard of their country of origin.

(4) Sample No. 3 was labelled "For Export" indicating that the manufacturer admits to knowing that his product does not necessarily conform to the standard of the country in which he is producing the article.

(5) Samples Nos. 3 and 4 would also be in violation of labelling requirements recommended by the Food and Drugs Revisal Committee as to a statement of the ingredients.

(6) No legal action can be taken in respect of these samples under the existing ordinance.

B - INDUSTRY AND COMMERCE

22. While there is a lack of legislation dealing with standards and various requirements as to foods and drugs a great deal of time is expended by the department in replying to queries from commercial houses as to the acceptability of products they propose to import into the Colony in respect of their composition and labelling. In other cases manufacturers of local products submit samples of their raw materials or products to find out if they are of a satisfactory standard. Exporters of Coloured Rum seek certification of the composition of their consignments abroad to expedite delivery at the points of destination and our certificates have also been sought in respect of exports to the United Kingdom of molasses shipped not only from British Guiana but also from a number of islands in the Caribbean. Although the department is not considered to be an active participant in the production sector of the Colony our assistance has been sought not only in the direction of ascertaining the composition of good established products but in suggesting alternative formulae, methods of production, etc., and in investigations when defects arise in processing or during storage.

Origin and Development of the Consulting Service:

23. The records of the Royal Agricultural and Commercial Society relating to its early efforts in bringing scientific assistance to industry and commerce have, of course, been lost in the fire of 1945 and little appears to be remembered of the early association of the Society with Chemistry in this country. In the Royal Charter granted to the Society in 1844, there is a mandate to promote the improvement of the Agriculture of the Colony and of every branch of Industry, Manufacture or Trade whereby the resources of the Colony are likely to be developed. The Administrative Reports of the Colony subsequent to 1879 seem to indicate that the Society probably established a Chemical Laboratory prior thereto and that this was replaced by a Government Laboratory which then fell into disuse. The 1879-80 Report states that the Government Laboratory was re-established in 1879. Although, three years later, food and drugs analyses were added to the responsibilities of the Government Analyst under the 1882 Ordinance the Department of the Government Analyst continued to play a dominant role in bringing scientific assistance to the sugar industry and to the agricultural and commercial community in general.

24. It was only in 1901 that the Board of Agriculture was founded, with the Government Secretary (Chief Secretary) as Chairman and the Government Analyst as Deputy-Chairman. Four years later, a new building was added to the south of the Analyst Department which then became a part of a new department, the Department of Science and Agriculture, and the Government Analyst became its first Director and also Chairman of the Board of Agriculture. For the remainder of his 37 years of service to the Colony the Director remained in control of Agriculture, Chemistry and Geology, but one year after his death the Department of Science and Agriculture was decentralised. In 1928 a new department, the Department of Agriculture, was created, the Analyst Department reverted to its original independent existence and the Geologist was assigned to the Lands and Mines Department.

25. Some idea of the relative development of the three segments of the original Department of Science and Agriculture can be gained from a consideration of the expenditure for the year 1960 on the following departments:-

	Recurrent	Development	Total
	$	$	$
Agriculture:	1,962,068	982,800	2,944,868
Geology:	-	601,248	601,248
Analyst:	69,120	-	69,120

Consulting analyses cannot be encouraged by the Analyst Department as staff shortage continues to be detrimental to the work of the department.

Revenue:

26. The revenue collected during the year on analyses carried out for industrial and commercial houses amounted to $1,068, the analyses being:-

Baking Powder - for formulation	3
Bread - for defect in processing	2
Brucine - for certification	1
Coconut Oil - for quality	1
Damage to upholstery	3
Damaged Rice	1
Damage to Rice Combine	2
Damage to Air Compressor	1
Confectionery - cause of deterioration	1
Gas on ships - certification of safety	12
Gold Jewellery - authenticity	1
Flour - quality	1
Cured Rum - certification	12
Hydrometers - certification	113
Methyl Violet - certification	1
Coloured Rum - certification	159*
Molasses - certification	26
Rice Bran - quality	2
Rice Bran Meal - quality	2
Total:	344

[*Included in Customs and Excise Total]

On the other hand, analyses carried out for the collection of customs and excise duties amounted to 2,372 samples and the revenue collected on rum alone amounted to $4,895,650. The rum industry of the Colony must also be protected by an unremitting watch on manufacturers of bush rum. During the year there were 47 submissions involving the characterisation of 96 exhibits for breaches of the Spirits Ordinance. A further 831 exhibits were examined from 62 submissions for breaches of the Intoxicating Liquors Licensing Ordinance and 5 exhibits from 3 submissions for breaches of the Customs Ordinance. The penalty for Bush Rum Manufacture is imprisonment but breaches of the Intoxicating Liquors Licensing and Customs Ordinances are punishable by fines and forfeiture to the Crown of the articles involved, thereby adding further to the revenue of the country.

27. The items examined for Customs and Excise purposes included:-

(1) For the Tax Ordinance:

Bay Rum	17	
Brandy	1	
Bitters	1	
Brucine Mixture	3	
Coloured Rum	160	
Cured Rum	1566	
Feints	2	
Ferrol Compound	60	
Fruit Preserves	14	
Limacol	69	
Methylated Spirit	6	
Pantene	2	
Shrub	4	
Sweets	111	
Tinctures	202	
Vodka	1	
Whisky	20	
Local Wines	57	
Imported Wines	5	2,301

(2) For the Customs Ordinance:
(Classification and breaches)

Fabrics	9	
Gilbey's Tonic Wine	1	
Gin Sling	1	
Gum Resin	6	
Honey Drink	1	
Metal	1	
Papaw Tonic Wine	1	
Pesqui Uranated Wine	1	
Red Seal Lye	1	
Tobacco	47	
Duty-free gasolene	2	71

(3) For the Spirits Ordinance:
(Certification and Breaches) 209

Liquors

(4) For the Intoxicating/Licensing Ordinance:
(Breaches) 831

Total: 3,412

28. Royalty assessment on manganese ore is based on the dry weight and manganese content of the dried ore. Thirty-one samples were submitted to the department during 1960 but their analyses await the arrival in the Colony of ore-grinding equipment for the department.

Merchandise Marks Ordinance:

29. As far as could be ascertained there is only one case, a civil case, in this Colony in which legal action has ever been instituted under the Merchandise Marks Ordinance but the advantage of a judicial ruling was lost as the case was settled out of court. Some reluctance has existed in the past, apparently, in regard to the institution of legal proceedings for false trade description. During the year, the possibility of legal action was pointed out in respect of one item examined for classification under the Customs Ordinance but a peaceful solution was found, as the importer agreed to re-label the item. It does appear that similar action could with profit be taken in respect of certain commercial articles, other than foods and drugs, already on sale within the Colony.

Some Free Consulting Analyses:

30. Free consultations have been given in the following cases:-

(1)	Supplies and Prices Department -	
	Soya Bean Oil:	61 samples
(2)	Government Minor Industries -	
	Rice Oil:	6 samples
(3)	Milk Pasteurisation Plant -	
	Milk:	61 samples
(4)	Government Contracts for Soap -	
	Bishop's High School:	1 sample
	Hospitals:	10 samples
	Central Tender Board:	3 samples
(5)	Finance Secretariat -	
	Cream of Tartar:	1 sample
(6)	B.G. Rice Development Company -	
	paddy and water:	3 samples
	boiler scales:	2 samples
	rice:	1 sample
(7)	Posts and Telecommunications -	
	metal discs:	2 samples
	coins:	2 samples
(8)	Commissioners of Currency -	
	currency notes:	2 samples
	Total:	155 samples

New Forces:

31. It seems fitting to mention that an Industrial Committee of the Royal Agricultural and Commercial Society was formed in January, 1960, with the following terms of reference:-

> "To promote all branches of Agricultural and Manufacturing Industries in British Guiana and to encourage commerce in the products of such Industries."

The Society, hoping that it will be able to make a lasting contribution to the progress of British Guiana, is reported to be proud to pioneer a new field in Industry thus, in modern times, setting the mark in Industry generally, which it set for Agriculture and Commerce in days gone by. The personnel of the Committee is as follows:-

Chairman: Hon. H.J.M. Hubbard,

Members: Mr. V.J. Willems (Timber)
Mr. G.B. Kennard (Agriculture)

It may be inferred from the statement of the Society's intention and the potential of the country, that the new field in Industry to which the Society hopes to apply an impetus embraces -

(1) Chemical Technology,
(2) Light Engineering Industries and
(3) Sundry Crafts.

32. Among the early efforts of the Committee, the question of standards has been given some measure of importance and the Government Analyst was invited to participate in a Meeting held in December, 1960, under the auspices of the Industrial Committee of the Royal Agricultural and Commercial Society to consider the setting up of a National Standards Organisation in British Guiana.

C - FORENSIC SCIENCE

33. Exhibits submitted in this field included:

		Submissions	Exhibits
(1)	Viscera and other articles for poisons:	120	212
(2)	Dangerous Drugs:	4	10
(3)	Pharmaceutical Preparations:	3	16
(4)	Stains:	3	5
(5)	Documents:	19	106
(6)	Suspect Currency Notes:	19	147
(7)	Materials for making forged currency notes:	2	17
(8)	Suspect Coins:	7	22
(9)	Materials for making counterfeit coins:	5	32
(10)	Firearms and Ammunition:	11	30
(11)	Exhibits in cases of suspected arson:	23	77
(12)	Articles in Acid-throwing cases:	2	4
(13)	Articles in cases of suspected obeah practice:	3	4
(14)	Articles with filed out identification marks:	25	26
(15)	Materials for comparison and identity:	13	68
(16)	Rape:	1	3
	Total:	260	779

34. The examination of these exhibits have been required -

(1) for Coroners' Inquests in some cases,

or in investigations into -

(2) Accidental poisoning,
(3) Suicide,
(4) Murder,
(5) Malicious killing of animals,
(6) Rape,
(7) Malicious Injury to persons,
(8) Malicious Damage to property,
(9) Breaches of the Firearms Ordinance,
(10) Breaches of the Dangerous Drugs Ordinance,
(11) False Pretences,
(12) Frauds of various kinds,
(13) Arson, or
(14) Larcency, Unlawful Possession or Robbery.

35. Large sums of money are in some cases at issue and in most cases there is involved the liberty of citizens who may be required to face charges involving penalties ranging from fines and imprisonment to the ultimate penalty, the death penalty. Speed in dealing with cases also is necessary, to assist the Police in following up investigations, or to avoid unreasonably long detentions or protracted suspense in the minds of persons awaiting trial, or to avoid holding up the business of the courts in dealing with matters brought before them. The number of exhibits awaiting attention at the end of the year amounted to 94, of which 83 were in arrears for from three to seven months, and an inquiry into the situation has been requested by the department.

IV - ORGANISATION

36. The half-way mark of the seven-year training and recruitment programme for the department was reached during 1960 and we are now at the point where a steady improvement in relation to the acquisition of permanent senior officers can be expected during the next three years. The first of our Government Conditional Scholars to have successfully completed his course of training overseas returned to the Colony in August, 1960, and was appointed to the Scientific Officer grade. Of the remaining four trainees still overseas, one is expected back in 1961, two in 1962 and the fourth in 1963.

37. It is useful to review the fate of officers of the sub-professional group in the department during the past quarter of a century:-

1. N. Newsam - promoted Government Analyst; retired 1954.
2. D.A. Iloo - retired 1955.
3. D.O. Pollard - resigned 1943 to enter Industry.
4. C. McWatt - transferred Medical Laboratory, 1960.
5. H. Annamunthodoo - resigned to pursue studies in Medicine, 1941.
6. N. Misir - resigned to study Medicine, 1946.
7. O.A. Johnson - resigned to study Medicine, 1948.
8. L. Chin - on duty.
9. A. Khan - died in the service 1958.
10. I. Ragwen - on duty.
11. G. Gonsalves - resigned to enter Commerce, 1955.
12. R. Harding - resigned to study Medicine, 1955.
13. B. Chung - transferred to Agriculture Department, 1956.
14. C. Gurudata - Government Conditional Scholar in Chemistry, 1956.
15. H. Edwards - on duty (resigned 1961).
16. O. de Haan - resigned to enter Industry, 1957.
17. M.M. Khan - resigned to study Medicine, 1957.
18. L. Chin - Government Conditional Scholar in Chemistry, 1958.
19. N. Archer - on duty (on transfer to Lands & Mines Department, 1961).
20. A. Dwarka - resigned to study Medicine, 1959.
21. R. McKinnon - resigned to study Medicine, 1960.
22. U. Amin - resigned to study Medicine, 1960.
23. M.P. Singh - on duty.

A revised approach to recruitment was discussed during the year with the Public Service Structural Review Committee to build up a stable core of Laboratory Assistants and Experimental Officers and arrest the tendency whereby service in the department is regarded mainly as an opportunity to gain training and experience for other fields of activity. A decision is awaited.

38. The table below gives the approved establishment for the department during the first and second halves of the year and the third column of the table shows the staff in attendance during the last quarter of the year.

Approved Establishment		Staff in attendance- last quarter 1960.
1st half 1960	2nd half 1960	
Government Analyst	Government Analyst	Government Analyst
Snr. Assistant Government Analyst		
2 Scientific Officers	3 Scientific Officers	2 Scientific Officers
1 Temporary Scientific Officer	1 Temporary Scientific Officer	1 Temporary Scientific Officer
1 Supernumerary Scientific Officer		
2 Grade A Tech. Assts.	2 Grade A Tech. Assts.	1 Grade A Tech. Asst.
3 Grade B Tech. Assts.	3 Grade B Tech. Assts.	1 Grade B Tech. Asst.
3 Grade C Tech. Assts.	3 Grade C Tech. Assts.	2 Grade C Tech. Assts.
1 Class II Clerk	1 Class I Clerk	1 Class I Clerk
1 Snr. Clerical Asst.	1 Stores Clerk/ Librarian	1 Stores Clerk/ Librarian
1 Clerical Assistant	1 Snr. Clerical Assistant	
	1 Clerical Asst.	2 Clerical Assts.
1 Messenger	1 Attendant	1 Attendant
2 Watchmen	2 Watchmen	2 Watchmen.

39. Appointments, Transfers and Resignations:

(1) Mr. M. Ramasamy, an Assistant Analyst from Ceylon, proceeded on 50 days' vacation leave on March 10th, 1960, prior to the termination of his secondment to this department as Senior Assistant Government Analyst.

(2) Dr. J. Paul, Temporary Scientific Officer, was appointed a Scientific Officer on two years' probation with effect from January 1st., 1960.

(3) Mr. C. Gurudata, Government Conditional Scholar (1956-60), was appointed a Temporary Scientific Officer with effect from 17th August, 1960.

(4) Mr. C. McWatt, Grade A Technical Assistant, was transferred on secondment to the Medical Laboratory on the 29th February, 1960.

(5) Mr. I Rawgen, Grade B Technical Assistant, was appointed to act as a Grade A Technical Assistant with effect from the 29th February, 1960.

(6) Miss U. Amin, Grade B Technical Assistant, resigned from the Service on the 30th September, 1960, to pursue a course of studies in Medicine.

(7) Mr. H. Edwards, Grade C Technical Assistant, proceeded on 6 months' vacation leave on the 2nd August, 1960.

(8) Miss R. McKinnon, Grade C Technical Assistant, resigned from the Service on the 30th September, 1960, to pursue a course of studies in Medicine.

(9) Mr. M.P. Singh was appointed a Grade C Technical Assistant on the 15th July, 1960.

(10) Mr. C.E. Peters was appointed Stores Clerk/Librarian on the 1st October, 1960.

(11) Miss S. Allen, Clerical Assistant, proceeded on 6 months' vacation on the 1st July, 1960.

(12) Miss E.C. Sharples, Clerical Assistant, joined the department on transfer from the Land Development Department on the 4th July, 1960.

40. In this further year of transition when we have had to accommodate four transitory officers, three of whom have had no previous experience, it is necessary to record my great appreciation of the work done by the old reliables and the new recruits to the permanent and pensionable establishment and to express my thanks for the support they have given under very trying circumstances. It is fitting also to record my thanks to the Clerical Establishment for the vast amount of voluntary work they undertook outside of official hours to complete in five weeks of intensive activity the considerable task of stencilling, duplicating and assembling the report and draft ordinances and regulations recommended by the Food and Drugs Revisal Committee; and, if an inadvertent omission in the Report of the Food and Drugs Revisal Committee may here be corrected, it is necessary to record thanks to Mr. H.R. Mitchell, Class I Clerk of this Department, who carried out the duties of Acting Secretary to the Committee during this period with commendable zeal and efficiency, waiving the appreciable emoluments attaching to the office.

EXPENDITURE AND REVENUE:

41. The allocation voted to run the department was $69,822. Actual expenditure during the year amounted to $57,861 but outstanding liabilities at the end of the year stood at $11,118 for which it was necessary to seek a revote in the 1961 Expenditure. As mentioned elsewhere in this Report, revenue collected by the department amounted to $1,068. The value of all analyses, if priced at commercial rates, is estimated at $104,319 to which may be added substantial charges which could reasonably be requested for technical advice on numerous matters relating to the welfare and progress of the country, were the department conceived on an independent basis.

J.E. HO-YEN
Government Analyst.