The annual report of the public analyst appointed for the parish of Kensington : upon the articles analysed under the Sale of Food and Drugs Act 1875, during the year ended 25th March 1886.

THE ANNUAL REPORT

OF THE

PUBLIC ANALYST

APPOINTED FOR THE

Parish of Kensington,

Upon the Articles analysed under "The Sale of Food and Drugs Act, 1875," during the Year ended 25th March, 1886,

BY

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PUBLIC ANALYST.

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1886.

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PUBLIC ANALYST

APPOINTED FOR THE

PARISH OF KENSINGTON,

Upon the Articles analysed under "The Sale of Food and Drugs Act, 1875," *during the Year ended 25th March*, 1886.

To the Vestry of the Parish of St. Mary Abbotts, Kensington.

GENTLEMEN,

During the year ended March 25th, 1886, a total of **five hundred and twenty-four** samples of food have been submitted to me for analysis by the Inspectors appointed under the Act. The number of samples collected in each quarter in the four districts of the Parish was as follows:—

	Number of Samples.
Quarter ended June 24th, 1885	113
,, ,, September 29th, 1885 ...	134
,, ,, December 25th, 1885 ...	135
,, ,, March 25th, 1886	142
Total	524

The following Table (I.) gives the names of the samples collected during each quarter, with the totals for the year :—

TABLE I.

Name of Sample.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	TOTAL.
Milk	46	57	46	69	218
Butter	23	3	5	14	45
Coffee	14	11	12	7	44
Black Pepper	5	10	9	3	27
Mustard	8	7	6	3	24
Flour	3	2	8	7	20
Bread	2	8	4	5	19
White Pepper	4	4	4	2	14
Gin	1	2	6	5	14
Vinegar	3	4	4	2	13
Cocoa	0	4	7	2	13
Sugar	3	4	4	1	12
Arrowroot	0	5	4	2	11
Brandy	0	1	5	1	7
Irish Whisky	0	3	2	2	7
Rum	1	1	0	5	7
Ale	0	0	1	4	5
Tapioca	0	3	1	1	5
Porter	0	0	1	2	3
Oatmeal	0	1	1	1	3
Sago	0	1	1	1	3
Tea	0	0	2	1	3
Scotch Whisky	0	0	1	1	2
Chocolate Powder ...	0	1	1	0	2
Cayenne Pepper	0	1	0	0	1
Corn Flour	0	1	0	0	1
Ginger	0	0	0	1	1
Total	113	134	135	142	524

The next Table (II.) shows the total number of genuine, adulterated, inferior, and probably adulterated samples :—

TABLE II.

Quarter.	1st.	2nd.	3rd.	4th.	TOTAL.
Genuine	51	56	81	67	255
Adulterated	41	54	46	40	181
Inferior	17	12	3	26	58
Probably Adulterated and Abnormal	4	12	5	9	30
Total	113	134	135	142	524

These figures give the following per centages :—

Genuine Samples...	48·6 per cent.
Adulterated Samples	34·5 ,,
Inferior Samples	11·06 ,,
Probably Adulterated and Abnormal Samples	5·7 ,,

In Table III. the names of the genuine, adulterated, inferior, and abnormal, or probably adulterated samples, taken during each quarter, are given, and the total number of each.

Quarter	Genuine.					Adulterated.					Abnormal or Probably Adulterated.					Inferior.					Total Samples
	1st.	2nd.	3rd.	4th.	Total Genuine	1st.	2nd.	3rd.	4th.	Total Adulterated	1st.	2nd.	3rd.	4th.	Total Abnormal.	1st.	2nd.	3rd.	4th.	Total Inferior.	
Milk	12	14	19	18	63	22	27	22	30	101	4	12	5	9	30	8	4	0	12	24	218
Butter	13	1	3	9	26	2	...	...	2	4	..	...	...	..		8	2	2	3	15	45
Coffee	11	7	11	4	33	3	4	1	3	11	...	...	...	...	...	...	...	...	...	...	44
Black Pepper ...	0	2	3	1	6	5	8	6	2	21	...	...	...	...	..	...	...	...	...	...	27
Mustard	0	1	1	1	3	8	6	5	2	21	...	...	...	...	...	...	...	...	...	...	24
Flour	3	2	8	7	20	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	20
Bread	2	8	4	5	19	...	...	...	..	...	...	...			...	...	...	...	...	...	19
White Pepper ...	3	3	4	2	12	...	1	...	...	1	..	...	...	...	...	1	...	...	...	1	14
Gin...	...	...	5	3	8	1	...	1	...	2	...	...	...	...	..	...	2	...	2	4	14
Vinegar	3	2	1	1	7	...	...	3	...	3	...	...	...	...		...	2	...	1	3	13
Cocoa	...	...	1	1	2	...	4	6	1	11	...	...	..	...	...	...	...	...	...	...	13
Sugar	3	4	4	1	12	...	...	...	...	...	...	...		...	...	...	...	...	...	...	12
Arrowroot	...	5	4	2	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11
Brandy	...	...	4	1	5	...	...	1	...	1	...	...	...	...	...	...	1	...	...	1	7
Irish Whisky ...	...	..	2	1	3	...	3	...	...	3	...	...	...	...	...	...	...	...	1	1	7
Rum	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	5	6	7
Ale...	...	...	1	3	4	...	...	...	...	..	...	...	...	...	...	...	...	...	1	1	5
Tapioca	...	3	1	1	5	...	...	...	...	...	...	...	...		...	...	...	...	...	...	5
Porter	...	...	1	2	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
Oatmeal	...	1	1	1	3	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	3
Sago	...	1	1	1	3	...	...	..	...	...	...	...	...	...	...	...	..	...	...	...	3
Tea...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2	3
Scotch Whisky ..	...	...	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Chocolate Powder ...	...	...	...	...	0	...	1	1	...	2	...	...	..	...	...	...	...	...	...	...	2
Cayenne Pepper ...	...	1	...	...	1	...	...	..	..	...	...	...	...	...	...	..	...	...	...	...	1
Corn Flour ...	..	1	...	...	1	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	1
Ginger	...	...	...	1	1	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Total	51	56	81	67	255	41	54	46	40	181	4	12	5	9	30	17	12	3	26	58	524

MILK.

The figures in the foregoing Table (III.) give the following per centages.

Of 218 samples,

63 were Genuine	=	28·9 per cent.
101 were Adulterated	=	46·3 ,,
30 were Abnormal, etc.,	=	13·7 ,,
24 were Poor and Inferior	=	11·0 ,,

And further, it will thus be seen that of Milk of bad quality, including Adulterated and Inferior Samples, there were

57·3 per cent.,

and that the samples other than Genuine Normal Milk amounted to

71 per cent.

With reference to this last point, it ought to be clearly understood that Milk of very abnormal richness is not precisely what is required by the purchaser. Of the 30 above-mentioned samples, almost all contained an *excess* of fat, and in several instances the original Milk had undoubtedly been watered. In some cases the amount of fat was as much as 11 and 12 per cent.

There are various ways of accounting for the presence of these abnormal quantities of fat; the drawing of Milk by means of a tap from the bottom of a churn in which it has been standing, the cream having risen, and the last samples drawn being thus abnormally rich; the addition of cream to watered Milk, and so on. Without entering into a consideration of these questions, it will probably be sufficient to point out the fallacy of the commonly accepted notion that the more *fat* there is in a sample of Milk, the better is the purchaser served. This is only true up to a certain point. The hygienic value of a food does not necessarily increase in consequence of the presence in excess of any one constituent, however valuable that constituent may be when it is present in proper natural proportion to the other constituents.

The 101 samples marked as adulterated in the Table had been tampered with at least to the extent indicated in Table IV.

TABLE IV.

Per centage of Extraneous Water.	Per centage of Fat abstracted.	Number of Samples.	Sunday Milks.
*27	...	1	1
*20	...	2	1
*15	...	3	1
*12	...	2	...
*11	60	1	...
*11	...	1	...
*10	...	7	2
*9	..	1	...
*8	8	1	...
*8	...	8	5
*7	8	1	..
*7	...	7	2
*6	25	1	...
6	...	9	5
*5	10·5	1	...
5	...	17	11
*4	10	1	...
4	...	12	5
*3	30	1	...
3	8	1	...
3	...	18	8
2	...	2	...
...	*85	1	...
...	*70	1	...
...	*60	1	1
	Total ...	101	42

It should be understood that the above results have been calculated on the lowest admissible standards. Altogether it may be said that out of 101 adulterated samples there are no less than at least 39 cases of very gross adulteration ; those cases, namely, which are marked with an asterisk (*) in the above table.

It may also be mentioned that a considerable number of the samples of milk had probably been deprived of some proportion of fat, but the amount left did not admit of their being reported as adulterated.

One sample gave evidence, on microscopic examination, of the probable presence of Unhealthy milk.

One sample contained some quantity of Wheat Starch.

Two samples contained Annatto ; and

Two samples were found to contain fibres of *Linen*, *Cotton*, and *Wool*.

SUNDAY MILK.

It will be remembered that a special order was made by the Vestry to collect a number of samples of milk on Sundays. This order having been fully acted upon by the Inspectors, has resulted in showing that a great deal of adulterated milk is probably sold on Sundays. Of the 218 samples of milk taken in the year, 90 were samples of Sunday milk. These 90 samples have been taken during the last three quarters, viz., after the receipt of the Vestry's order.

TABLE V.

Quarter.	2nd.	3rd.	4th.	Total Samples.
Genuine	4	8	14	26
Adulterated	10	8	24	42
Abnormal and Inferior ...	3	4	15	22
Total	17	20	53	90

These figures give the following per centages :—

Genuine ... ... 28·9 per cent.
Adulterated ... ... 46·7 ,,
Abnormal and Inferior ... 24·5 ,,
} nearly.

A reference to Table IV. will show the extent to which the 42 adulterated samples of Sunday milk had been tampered with.

BUTTER (45 samples).

The figures in Table III. give the following per centages :—

Genuine (26) ... ... 57·8 per cent.
Adulterated (4) ... ... 8·9 ,,
Inferior (15) ... ... 33·3 ,,

The four adulterated samples respectively contained at least—

85 per cent. of foreign fat.
60 ,, ,, ,,
50 ,, ,, ,,
25 ,, ,, ,,

COFFEE (44 samples).

Genuine	...	...	75 per cent.
Adulterated	...	...	25 ,,

The 11 adulterated samples contained Chicory :—

1 contained at least 45 per cent.
1 ,, ,, 20 ,,
9 ,, ,, 5 ,,

BLACK PEPPER (27 samples).

Genuine	...	...	22·2 per cent.
Adulterated	...	...	77·7 ,,

Samples of genuine commercial Black Pepper should not yield more than 5 or 5·5 per cent. of Total Mineral Matter. Any sample yielding more than 7 per cent. must be considered as adulterated within the meaning of the Act. The following are the particulars relating to the 21 adulterated samples :—

Total Mineral Matter. per cent.	Silica and Sand. per cent.	Remarks.
14·00	8·00	2 per cent. Rice Flour, much husk and dirt.
13·86	7·51	Much husk and dirt.
13·76	5·20	,, ,, ,,
12·51	6·80	,, ,, ,,
12·00	5·50	,, ,, ,,
11·83	5·80	5 per cent. Rice Flour, much husk and dirt.
11·69	5·00	Much husk and dirt.
11·59	4·00	,, ,, ,,
10·58	5·35	,, ,, ,,
10·55	5·10	,, ,, ,,
9·95	5·00	2 per cent. Rice Flour, much husk and dirt.

Total Mineral Matter. per cent.	Silica and Sand. per cent.	Remarks
9·52	4·00	Much husk and dirt.
9·50	4·20	,, ,, ,,
9·38	4·02	,, ,, ,,
9·22	4·00	,, ,, ,,
9·20	4·05	,, ,, ,,
9·13	4·35	,, ,, ,,
8·75	...	,, ,, ,,
8·05	...	,, ,, ,,
7·78	...	,, ,, ,,
7·11	...	,, ,, ,,

It is often asserted that in these cases the presence of an excess of mineral matter is due to the method of gathering and preparing the Pepper; or again, to the keeping of the Pepper in a bag or drawer, and the consequent accumulation of mineral matter in the last samples taken therefrom. The latter, no doubt, is probably a frequent cause of the presence of a small excess over the limit allowed. The former contention is disposed of by the quantity of mineral matter present in genuine samples of fair quality being perfectly well known, and there can be no question that the presence of the higher amounts above-mentioned was due to the grossest carelessness, or to actual admixture with "sweepings," etc.

MUSTARD (24 samples).

Genuine	12·5	per cent.
Adulterated	87·5	,,

The 21 adulterated samples contained Wheat Flour in the undermentioned proportions at least, and were coloured by the addition of small amounts of Turmeric powder:—

1	contained at least	40	per cent.	Wheat	Flour.
1	,, ,,	10	,,	,,	,,
1	,, ,,	7	,,	,,	,,
13	,, ,,	5	,,	,,	,,
5	,, ,,	3	,,	,,	,,

Mustard should obviously be sold absolutely free from these admixtures, unless their presence is clearly indicated by the label on the samples.

WHITE PEPPER (14 samples).

One sample only was adulterated ; it contained
at least 3 per cent. Rice Flour,
,, 1 per cent. Wheat Flour, and
an excess of Mineral matter, viz., 6·5 per cent.

VINEGAR (13 samples).

The three adulterated samples contained Free Sulphuric Acid and were weak in Acetic Acid, as follows :—

Free Sulphuric Acid. Per cent.	Acetic Acid. Per cent.
0·53	2·88
0·4	3·18
0·24	3·42

Nearly 0·2 per cent. Free Sulphuric Acid is allowed in Vinegar, although if the Vinegar is properly prepared and of good quality, no such addition is necessary. Good Vinegar should contain *at least* 3 per cent. of Acetic Acid.

Three samples were of very inferior quality, and no doubt slightly adulterated.

COCOA (13 samples).

The 11 adulterated samples contained Added Starch and Cane Sugar, as follows :—

Added Starch. Per cent.	Cane Sugar. Per cent.	
At least 55	At least 30	
,, 50	,, 30	(2 samples)
,, 40	,, 35	
,, 40	,, 30	(2 samples).
,, 40	,, 25	
,, 35	,, 30	
,, 25	,, 30	
,, 20	,, 16	(labelled " Epps' Cocoa.")
,, 15	,, 20	

The added Starch present in these samples consisted of Arrowroot and Sago, with the exception of the sample labelled "Epps' Cocoa," which contained Arrowroot Starch only.

The two genuine samples were samples of "Flake" Cocoa.

CHOCOLATE POWDER (2 samples).

These samples contained Arrowroot and Sago Starches, and Cane Sugar, as under, at least:—

Added Starch.	Cane Sugar.
50 per cent.	20 per cent.
40 ,,	25 ,,

It is obvious that if Chocolate Powder is to be understood to mean Powdered Chocolate, these samples should be considered as adulterated.

SPIRITS (37 samples).

Gin (14 samples).

The two adulterated samples were respectively—

36·5 degrees under proof; and

38·05 ,, ,, ,,

The limit allowed by the Act for Gin being 35 under proof.

Brandy (7 samples).

The adulterated sample was 29·5 degrees under proof.

Irish Whisky (7 samples).

The three adulterated samples were each 27 degrees under proof, the limit allowed by the Act for Brandy and Irish Whisky being 25 under proof.

These are all slight cases of adulteration with water. Although most of the samples of Spirits were of very inferior quality, the presence of no other adulterant was detected.

ALE AND PORTER (7 samples).

None of these samples could be considered as adulterated. One sample was very weak and inferior, but in the absence of any legal definition as to strength, it could not be adversely reported upon.

TEA (3 samples).

Two samples were of very inferior quality, containing exhausted leaves.

The samples of

Arrowroot,	Ginger,
Bread,	Oatmeal,
Corn Flour,	Sago,
Cayenne Pepper,	Sugar,
Flour,	Tapioca,

Were all genuine.

The foregoing is a brief summary of the results of the year's work under the Sale of Food and Drugs Act, in Kensington.

In all the more serious cases of adulteration, I am informed that prosecutions were instituted, namely, in 51 cases. Fines in 42 cases, amounting to £37 1s. 6d., were inflicted. The circumstances in the other cases did not seem such as to ensure a conviction, and no proceedings were taken.

Since the passing of the "Adulteration Act," and the "Sale of Food and Drugs Act," the adulteration of food has no doubt very greatly diminished, in spite of the very limited extent to which these Acts have been applied in the majority of places, the various defects in the Acts themselves, and the legal difficulties which have been raised. But adulteration is still very extensive, even in the few districts where the Act is enforced, and a constant and rigid supervision is required in order to keep it down. Unfortunately some amount of misconception exists in regard to the working of the Sale of Food and Drugs Act, and to the value of the results obtained, and it may be convenient to refer to one or two of these points.

It is frequently assumed that if an adulterant is not "harmful" in the popular sense, its addition to the food in question is a matter of very small consequence. Without entering into a consideration of what is and what is not "harmful," which is a question to be decided by experts, and by experts alone, it will be sufficient to point out that the Act is not intended to deal with "harmful" adulteration only, but with every kind of adulteration of food and drugs.

The sending of samples to Somerset House for analysis is another matter upon which it is very desirable that no misconception should exist. Cases are dismissed occasionally when the Analysts at Somerset House do not feel themselves justified in confirming the certificate of the Public Analyst upon which a prosecution has been ordered.

This occurs, as a rule, with samples of Milk. The Inspector having purchased a sample of Milk, divides it in the presence of the vendor into three parts, which he seals up. One part he leaves with the vendor, the second he submits to the Analyst, and the third he retains, should the Analyst certify that his sample is adulterated, until the case is heard, in order that it may be forwarded to Somerset House if the defendant desires it. Now, it will be observed, that some length of time must of necessity elapse before the Analysts at Somerset House can examine the sample submitted to them. In such a fluid as milk, a certain amount of alteration must take place on keeping, and it is generally understood that the Somerset House Chemists make an allowance for the time that has passed between the selling of the sample and their analysis of it. That is to say, that an addition is made to some of the constituents of the milk, which is more or less great, according to the length of time, and which occasionally would appear to show that at the time of sale the milk could not be considered as adulterated. While venturing to differ with the Somerset House Analysts as to the certainty of their proceedings in this respect, in the majority of cases I am glad to acknowledge the cautious manner in which their certificates are worded when they do not feel themselves justified in confirming the results of the Public Analyst:—

> "After making allowance for the natural loss arising from the decomposition of the Milk through keeping, the proportion of non-fatty solids is not lower than is found in genuine Milk. From a consideration of these results *we are unable to affirm that water has been added to the Milk.*"

Another very potent cause of discrepancy between the certificates of Public Analysts and those of Somerset House is the difference in the "standards" adopted. The Somerset House

Chemists adopt standards which are lower than those adopted by the great body of Public Analysts in the country, apparently with a view of preventing possible convictions for selling milk which has proceeded from some single abnormal cow yielding a fluid which would be reported as adulterated on the standards taken for mixed milk.

It should be clearly understood that Somerset House is not a Court of Appeal. It may, perhaps, be considered as a Court of Confirmation. There is no reason whatever for supposing that the Somerset House Analysts are more correct in their views and more certain in their results than any other Analysts, and I am indeed convinced that they would be the last to arrogate to themselves any such monopoly of knowledge and of accuracy.

There can be no doubt that many alterations in the law are required; and also a very considerable extension of it, to apply to other articles besides foods and drugs.

I have great pleasure in stating that much of the success which has attended the working of the Act in Kensington during the past year is due to the very able and intelligent manner in which Messrs. Abbott, Gaylard, Middleweek, and Wightman, the Inspectors under the Act, have performed their duties; duties attended with some difficulty, and often of an unpleasant nature.

Lastly, I have to express my thanks to your Vestry for the confidence and support extended to me in carrying out the work of an office, the great importance and responsibility of which is gradually but certainly being recognised by the public.

I have the honour to be,

Gentlemen,

Your obedient Servant,

CHARLES E. CASSAL,

Public Analyst.