

(No. 28.)



1884.

PARLIAMENT OF TASMANIA.

GOVERNMENT ANALYST:

REPORT FOR 1883.

Presented to both Houses of Parliament by His Excellency's Command.



Government Laboratory, Hobart, 1st April, 1884.

SIR,

I HAVE the honor to enclose herewith my Report on the work done in the Government Laboratory during the year 1883.

I would more especially bring under your notice the recommendations made with respect to the importation of Tea and the retailing of Poisons.

I have the honor to be,

Sir,

Your obedient Servant,

W. F. WARD,
*Associate, Royal School of Mines, London,
Government Analyst.*

The Hon the Chief Secretary.

RETURN showing number of Analyses made in the Government Laboratory during the Year 1883.

<i>Substance examined under "Food and Drugs Act," 1881.</i>	<i>For the Government.</i>	<i>For Municipalities.</i>	<i>For Private Individuals.</i>	<i>TOTAL.</i>
Tea.....	37	...	2	39
Milk.....	4	11	2	17
Brandy	1	11	2	14
Rum.....	1	10	2	13
Gin	1	...	...	1
Whisky .....	...	1	...	1
Wine	1	...	...	1
Ale .....	...	6	...	6
Beer.....	...	1	...	1
Dandelion Beer .....	...	2	...	2
Bread .....	...	3	1	4
Flour.....	...	...	4	4
Honey.....	...	1	...	1
Tomato Sauce.....	...	...	1	1
Aromatic Vinegar.....	...	...	1	1
Coffee .....	...	2	...	2
Chicory .....	...	2	...	2
Lime Juice.....	1	...	...	1
	46	50	15	111

Return of Analyses—continued.

<i>Substance examined.</i>	<i>For the Government.</i>	<i>For Private Individuals.</i>	<i>TOTAL.</i>
Tobacco	6	..	6
Water .....	..	3	3
Knife (for blood)	1	..	1
Poisoned Meat	1	..	1
Dog's Stomach and contents .....	..	1	1
Nickel Mineral	2	..	2
Tin Ore	3	18	21
Ditto (dressed) .....	..	7	7
Quartz, for Gold and Silver	8	7	15
Pyrites, ditto	1	..	1
Ditto, for cause of "sickening"	2	..	2
Flue Dust from Pyrites Works .....	..	1	1
Gold Melting .....	..	1	1
Gems (supposed)	2	4	6
Bismuth Ore .....	..	1	1
Antimony Ore.....	1	..	1
Cobalt Ore .....	..	1	1
Manganese Ore .....	..	1	1
Silver-Lead Ore .....	..	4	4
Iron and Iron Ores	4	1	5
Coal.....	2	4	6
Brick and Infusorial Earth	1	1	2
Limestone .....	..	1	1
Sand, &c. (for useful metals).....	..	5	5
Guano .....	..	4	4
Wattle Bark .....	..	2	2
Patent Blasting Powder	1	..	1
Photographer's Fluid .....	..	2	2
	35	69	104

[NOTE.—The figures in parentheses show the total number of samples examined.]

TEA. (39.)

In accordance with the special clause in the "Food and Drugs Act" relating to tea, thirty-seven samples forwarded by the Collector of Customs have been examined, with the result that eight were found to be more or less mixed with exhausted or foreign leaves, stalks, &c., the first-named being the most usual adulterant. The total amount of ash, with the proportions of its soluble and insoluble constituents, is determined, and a microscopic examination made in every case, the tea being submitted to further tests when any suspicious appearances are noted. The admixture of exhausted leaves with genuine tea is not usually sufficient to justify its condemnation as unfit for human food, but I would recommend that when the amounts of extract and of soluble ash naturally present fall appreciably below thirty and three per cent. respectively, the tea should be specially dealt with under the Act. A "Brick Tea" was found to contain exhausted leaves, broken small, and an excess of mineral matter. Two samples imported in 1882 were sophisticated to a greater extent than any received since.

MILK. (17.)

Six samples were reported as being adulterated, either by the addition of water or the removal of cream; four retail sellers were in consequence summoned and fined.

Twenty-five per cent. of added water was found in the supply of a Government Institution in Launceston.

The milk from a cow suffering from tuberculosis was also examined. That first received was of normal composition, but being the last milk yielded was not a fairly representative sample; a second one was therefore obtained, which was found to be very deficient in fat, but presenting no other abnormal features. These samples were forwarded by the Government Veterinary Surgeon through the Chief Inspector of Sheep.

ALCOHOLIC LIQUORS. (39.)

[NOTE.—The brandies consisted chiefly of spirit made from corn or potatoes, and malt, the supply of genuine brandy having fallen off to an enormous extent owing to the ravages of Phylloxera in the French vineyards.]

The Brandies examined varied in strength from 3·9 per cent. over proof to 20·5 per cent. under proof. The strongest rum contained 57·25 per cent. of alcohol, and was 14·2 over proof, the weakest 22·5 per cent., or 52·2 under proof,—the limit allowed being 35·75 per cent. of alcohol, or 25 under proof. Two

retailers were heavily fined for adulteration with water. Lead, probably derived from the pipes of the still, was detected in two cases; this harmful impurity is precipitated when the rum is kept for some time in a cask, other injurious constituents due to imperfect rectification being also eliminated by age, and the effects of the spirit, even when drunk to excess, much diminished.

The only Whisky was of proof strength, but contained more fusel oil than any other spirit examined.

The Port Wine which, together with samples of Gin, Rum, and Brandy, was examined as to its fitness for Hospital use, was far removed from a natural wine, chiefly by large additions of sugar and brandy.

Considerable care was bestowed on the examination of the Ale and Beer, the samples submitted representing practically the whole of the local supply.

One Dandelion Beer compared with the other was found to leave on evaporation one third the amount of residue, and to contain two and a quarter times as much alcohol, and nine times as much mineral matter, including an excessive quantity of salt.

TOMATO SAUCE. (1.)

This sauce contained so much copper that a considerable deposit of that metal was formed on a knife brought into contact with it for a short time, the quantity present being sufficient to cause serious indisposition. The danger of using copper vessels for the preparation of this and similar articles was pointed out to the maker, who had fortunately disposed of only a small quantity.

COFFEE AND CHICORY. (4.)

The coffees examined were found to contain at least twenty-five cent. of chicory apparently added to increase the weight, as the packages in which they were sold bore no labels describing their contents as "mixtures;" sections 7 and 8 of the Act being thus infringed by this large addition of the cheaper substance without giving notice to the purchasers.

TOBACCO. (6.)

Five out of six samples submitted to the Board of Tenders were reported as artificially coloured and flavoured, or weighted with sand or water.

WATER. (3.)

1. Collected from a shingled roof, tested for metallic impurities, especially arsenic, the presence of which was suspected owing to the proximity of smelting works, but nothing injurious was present which could be traced to that source.

2. Found to contain zinc derived from the galvanized tank in which it was stored.

3. Condemned as unwholesome, judging from the suspicions attaching to the source of supply, as well as from the results of analysis.

CLASP KNIFE.

This was minutely examined for blood, but no trace could be discovered, a negative result which was subsequently confirmed.

POISONED MEAT AND DOG'S STOMACH.

Both contained strychnine. The meat was picked up in a country township, the stomach was that of a dog killed in Hobart. I would recommend that considerable restrictions should be imposed on the retailing of all poisons, and due provision made for the compulsory registration of all sales, and of the persons supplied. This, I have reason to believe, is not required in some cases owing to the caution voluntarily exercised, but it appears to be necessary as a check on reckless dealing.

NICKEL MINERAL. (2.)

This was found to be an unusual combination of several metallic sulphates in varying proportions, and was possessed of considerable interest. It was forwarded by the Inspector of Mines, from whom many other samples, including iron and antimony ores, auriferous quartz, and coal were received.

TIN ORE. (28.)

Experiments were made to show the influence of temperature in the assay of certain classes of impure dressed ores, the yield of metal being larger as the heat is increased; the following results show the possibility of error in trusting to the fixed deduction often made in the case of similar ores:—

	<i>Metal obtained.</i>	<i>containing { Metallic Tin.</i>
No. 1.	52.2.	48.0.
No. 2.	53.6.	48.1.
No. 3.	57.0.	48.4.

AURIFEROUS QUARTZ, PYRITES, AND "FLUE DUST," FOR GOLD AND SILVER. (20.)

Only four of these minerals contained gold in payable quantities. Two were specially examined and found to contain arsenic, which caused the "sickening" of the mercury used in the extraction of the gold.

GEMS. (6.)

Some of those belonged to mineralogical family of gems, but none possessed any commercial value.

COAL (6.)

Fingal Coal.

Four samples were analysed, two of them very fully, in order to ascertain their value as compared with Newcastle coal, a representative specimen of which was examined at the same time.

Mersey Coal.

This was found to contain about five per cent. of sulphur, and was not fit for steam-raising purposes.

WATTLE BARK. (2.)

Examined to detect supposed mixture of silver- with black-wattle bark.

PATENT BLASTING POWDER.

Analysed and experimented with in order to test its fitness or otherwise for storage in the Magazine with ordinary gunpowder.

NOTE.—It is probable that valuable Ores of Silver, Mercury, Nickel, Cobalt, Manganese, and Zinc are overlooked by prospectors in their search specially for Gold and Tin.

The accompanying list of articles of food, and the substances which have been used for adulterating them, was compiled and a copy forwarded to the Superintendents of the City and Territorial Police.

Notices were received of my appointment as Analyst by the Councils of the following Rural Municipalities:—Fingal, Glenorchy, Spring Bay, Westbury, Richmond, Brighton, Sorell, Green Ponds, Clarence, Longford, Glamorgan.

W. F. WARD, *Government Analyst.*

ARTICLES of Food, and the Substances used for their Adulteration.

<i>Food.</i>	<i>For Bulk and Weight.</i>	<i>For Colour.</i>	<i>For Taste, Smell, &c.</i>
Annatto.	Rye, Wheat, and Barley Flours, Turmeric, Carbonate and Sulphate of Lime, Red ferruginous Earths, Red Lead, Salt.	Turmeric, Red ferruginous Earths, Salt, Alkali.	Sulphate of Copper.
Arrowroot.	Sago, Potato, and Tapioca, Starches, and inferior Arrowroot.		
Anchovies.	Dutch, French, and Sicilian Fish.	Bole Armenian, Venetian Red.	
Brandy.	Water, Potato Spirit.		Burnt Sugar.
Bread.	Potatoes, Rice, Beans, Rye, Indian Corn, Chalk, Bonedust, Plaster of Paris.	Sulphate of Copper.	Alum.
Butter.	Water, Foreign Fat, Curd, excess of Salt.		
Bottled Fruits and Vegetables.	..	Salts of Copper, Logwood, Beetroot, Aniline.	
Cheese.	Potatoes, Beans.	Annatto, Bole Armenian, Venetian Red, Saffron, Carrots.	Sage, Parsley.
Coloured Confectionery.	Arrowroot, Wheat and Potato Flour, Gypsum, Chalk, Pipeclay.	Many very poisonous colouring materials.	Artificial Essences.
Coffee.	Chicory, Roasted Wheat, Rye, or Potato Flours, Roasted Beans, Mangel-Wurzel, or Acorns, Coffee-grounds.	Burnt Sugar, Venetian Red, Madder Root.	
Chicory.	Roasted Wheat, and Rye Flours, Burnt Beans and Acorns, Sawdust, Carrots, Mangel-Wurzel, Tan.	Ferruginous Earths, as Venetian Red and Umber, Burnt Sugar, Baked Liver, Burnt Blood.	
Cocoa and Chocolate.	Arrowroots, Flour of Wheat, Indian Corn, Sago, Potato or Tapioca, Sugar, Chicory, Cocoa Husks, Treacle, Chalk.	Venetian Red, Red Ochre, Red Lead, Vermilion.	

<i>Food.</i>	<i>For Bulk and Weight.</i>	<i>For Colour.</i>	<i>For Taste, Smell, &c.</i>
Cayenne Pepper.	Ground Rice, Mustard Husk, Salt.	Red Lead, Vermilion or Bisulphide of Mercury, Venetian Red, Turmeric.	
Custard and Egg Powders.	Wheat, Potato, and Rice Flours.	Chrome Yellow or Chromate of Lead, Turmeric.	
Curry Powder.	Ground Rice, Potato, Starch, Salt.	Red Lead.	Salt.
Flour.	Rice, Beans, Rye, Indian Corn, Potato Flour, Plaster of Paris, Chalk, Bonedust.	..	Alum.
Ginger.	Wheat, Sago, and Potato Flours, Ground Rice, Mustard Husks.	Turmeric.	Cayenne Pepper.
Gin.	Water, Sugar.	..	Cayenne, Cassia or Cinnamon, Sugar, and various flavourings, Turpentine. For fining—Alum, Salt of Tartar, Sugar of Lead.
Honey.	Cane Sugar, Chalk, Pipe-clay, Sulphate of Lime.		
Isinglass.	Gelatine.		
Lard.	Potato Flour, Suet, Alum, Lime, Water.	..	Carbonate of Soda, Potash.
Lemon and Lime Juices.	Water.	..	Sulphuric and other Acids.
Liquorice.	Wheat Flour, Starch, Chalk, Gelatine.		
Malt Liquors.	Water, Sugar, Treacle.	Burnt Sugar, Liquorice.	Alum, Salt, Tobacco, Sulphate of Iron, &c.
Mustard.	Wheat Flour, Turmeric, Cayenne Pepper, Clay, Plaster of Paris.	Turmeric.	
Milk and Cream.	Water, Starch, &c.	Annatto.	
Marmalade.	Apple or Turnip.		
Oatmeal.	Barley Flour, Rice, Maize, "Rubble."		
Pickles.	..	Salts of Copper.	Sulphuric Acid.
Potted Meats and Fish.	Boiled Flour.	Bole Armenian, Venetian Red.	
Preserves.	Inferior and cheaper Fruit.	Salts of Copper, Fuchsine.	
Pepper.	Wheat, Pea, and Rice Flours, Mustard, Linseed Meal, Pepper Dust, Sand, Woody Fibre.		
Sago.	Potato Flour.		
Tinned Vegetables.	..	Sulphate of Copper.	
Rum.	Water.	..	Cayenne, Burnt Sugar.
Sugar.	Wheat and Potato Flours, Tapioca, Sand, Plaster of Paris.		
Spices, Cinnamon.	Cassia, Wheat Flour, Sago Potato Flour, Arrowroot.		
Mixed Spice.	Wheat, Sago, and Potato Flours, Ground Rice.		
Sauces.	..	Red Earths, as Venetian Red and Bole Armenian, Red Lead.	Copper Salts.
Tea.	Exhausted Tea, "Lie Tea," Sand, Oxide of Iron, Starch, Foreign Leaves.	Black Lead, Gum, Indigo, Prussian Blue, Turmeric, Chinese Yellow, China Clay, French Chalk, Mica, Gypsum.	Sulphate of Iron, Catechu, Gum, &c.
Vinegar.	Water.	Burnt Sugar.	Sulphuric and Pyroligneous Acids.
Wine.	Extraneous Spirit, Water, Cider, Juice of Rhubarb, Gooseberries, Pears, &c.	Logwood, Burnt Sugar, Cochineal, Elderberry Juice, &c.	Cane Sugar, Sulphate of Potash.