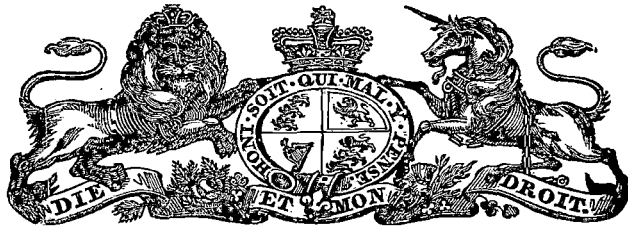


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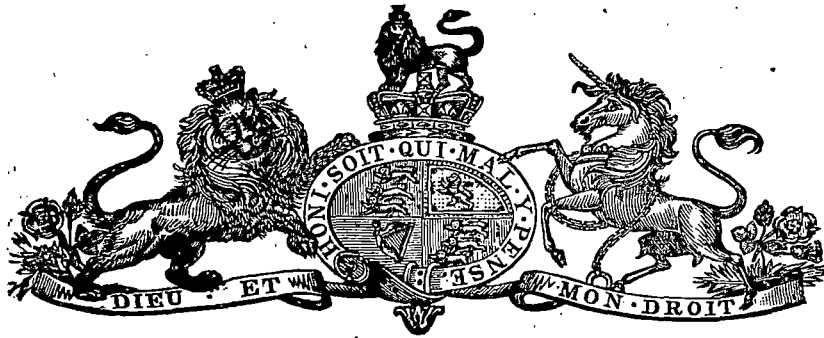
1893.

PARLIAMENT OF TASMANIA.

GOVERNMENT ANALYST:

REPORT FOR 1892.

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



GOVERNMENT ANALYST.

REPORT FOR 1892.

Government Laboratories, Hobart, 18th May, 1893.

SIR,

I HAVE the honor to enclose herewith a statement showing the number of substances examined during the year 1892, with notes on some of the results obtained.

It is difficult to convey a correct impression by these figures alone of the work done, as one substance may be tested in an hour, while another may require to be under examination for a week or more, or several repetitions of a single test may be necessary.

Attempts have been made in other places to attach a numerical value to each analysis made, and under such an arrangement a much more imposing array of figures is produced; but I have not hitherto thought it necessary to do this.

The mineral samples examined for private individuals were less numerous in 1892 than in the previous year, mainly owing to the temporary depression on the West Coast.

The general work of the Laboratory, however, apart from this and the tea samples examined for the Inspector of Customs, shows a decided increase, more especially in that carried out for various Government Departments, but extending also to the requirements of Municipalities and private individuals; and further frequent testing of Imports for Customs purposes is now required under the revised Tariff.

The Laboratory was, in September last, transferred to the new quarters in Bathurst-street, which have been specially designed and built for this work, and these have been found to fulfil their purpose in a most satisfactory manner.

I have the honor to be,
Sir,

Your obedient Servant,

W. F. WARD, *Government Analyst.*

The Honorable the Chief Secretary.

STATEMENT of Analyses and Examinations made in the Government Laboratories during the Year 1892.

<i>Substance examined.</i>	<i>For the Government.</i>	<i>For Municipalities.</i>	<i>For Private Individuals.</i>	TOTAL.
Tea	1476	...	2	1478
Coffee	1	...	...	1
Milk .....	...	81	1	82
Spirits, Wine, Beer	8	30	...	38
Vinegar	3	...	2	5
Water	17	5	4	26
Essences	3	...	2	5
Bread, Flour, Oatmeal	3	...	...	3
Beetroot	2	...	5	7
Chemicals and Drugs	4	...	1	5
Soils	4	...	...	4
Manures .....	...	...	12	12
Sundry for Poison	9	7	1	17
Ditto in Criminal Cases	8	...	...	8
Zinc and Wire	5	...	...	5
Explosives	35	...	...	35
Firebrick and Limestone	2	...	3	5
Coal, Charcoal, Shale	8	...	4	12
Asbestos	2	...	...	2
Gum, Resin	2	...	...	2
Tar, Benzol	2	...	...	2
Shale Oil	1	...	1	2
Kerosene Oil	51	...	...	51
Eucalyptus Oil .....	...	...	14	14
Iron Ore .....	...	...	2	2
Tin Ore	7	...	10	17
Ore and Tailings for Gold, Silver, and Lead	54	...	128	182
Sundry	8	...	2	10
Apple Experiments .....	...	...	20	20
	1715	123	214	2052

TEA (1478).

The great bulk of the tea imported is of decidedly inferior quality.

COFFEE (1).

A sample of coffee (so-called) supplied to the Launceston Hospital was found to contain at least 75 per cent. of chicory, and consequently to be unsuitable for invalid consumption.

MILK (82).

Eight samples were reported as not "of proper substance, nature, and quality," owing either to addition of water or abstraction of cream, or in one case to the milk being colostrum or "beastings."

WINE, BEER, SPIRITS, (38).

Tasmanian fruit wines contained of proof spirit, "apple" 32, and "blackberry" 20 per cent.

Five samples of spirits had been reduced by the addition of water to a strength of from $3\frac{1}{2}$ to 12 per cent. below legal limit.

Of various samples examined for the Inspector of Customs, a Chinese spirit imported as "Pain Killer" was nearly of proof strength, and a "methylated spirit" was spirits of wine, containing no methyl alcohol (wood spirit) to prevent its consumption as a beverage.

VINEGAR AND ACETIC ACID (5).

A vinegar was found to contain the low proportion of 3.25 per cent. of acetic acid.

BREAD, &c., (3).

Bread supplied to the Launceston Hospital contained the excessive proportion of 40.5 per cent. of water, although several days had elapsed between the baking and the examination.

BEET-ROOT (7).

These were white or sugar beet, containing from 13 to 15 per cent. of sugar, water varying from 76 to 81.4, woody matter, &c. from 4.4 to 7.6, and mineral matter from 1.1 to 1.5 per cent.

SOILS AND MANURES (16).

The percentage of phosphate of lime in guanos varied from 11 to 57 per cent., this being as a rule the only ingredient in them of any value for fertilizing purposes, while this also is practically valueless in the absence of proper proportions of nitrogen and potash.

TESTS FOR POISON (17).

Arsenic was found in three cases and strychnine in one, the substances having been used or intended for the poisoning of domestic animals. On the other hand, where an attempt to poison a human being was suspected, examination only showed the accidental presence of a harmless substance, on the flavour of which the suspicion was founded.

Two cases of poisoning by unwholesome cheese were reported, and the special cheese poison "Tyrotoxicon" was specially sought for, but was not detected. There were indications that the curd from which the cheese was made had at some time during its preparation become decidedly mouldy.

WATER (26).

A sample of water examined for the Engineer-in-Chief was found to owe its corrosive action to the presence of Magnesium Chloride, a substance largely met with in the spring waters of this Island; on the other hand, marked quantities of Sulphuric Acid were found in corrosive mine waters, this being formed by the action of air and moisture on the sulphides so freely distributed in metal-bearing veins; alternate flooding and pumping out presenting the most favourable conditions for its formation.

Water discharged into New Town Bay from a tannery, and said to cause much destruction of fish, contained per gallon:—

	Grains.
Total dissolved solids	723
Solid matter in suspension.....	1319

The smell of this water was most offensive, much lime, both suspended and dissolved, was present, and gelatinous matter separated out on standing. Lime-water would act as a direct poison: Gelatine would tend to clog the gills of fish, and a fine precipitate of Carbonate of Lime would be formed on mixing with other water, and this would probably aid the clogging action of the Gelatine.

ESSENCES (5).

Attention was called to two of these in Special Report for 1891-2, and the total prohibition of the importation of similar substances was strongly recommended, one bottle being labelled "Ess. Cognac Brandy (Fine Champagne). One pound of this essence is sufficient for 50 gallons of spirit; it simply requires mixing",—the only apparent use of this essence is therefore the local manufacture of spurious Brandy from diluted Spirits of Wine.

ZINC AND WIRE (5).

Examined for the Superintendent of Telegraphs.

EXPLOSIVES (17).

A large shipment of Dynamite, about 400 cases, was found to be of uneven quality. The great bulk of it was in good condition, but exudation of Nitro-Glycerine had taken place in some of the packages. This occurring but rarely, permission was given for full examination and the repacking of the sound portion, with the result that about 150 exuding cartridges were rejected and destroyed.

A sample of German Gelatine-Dynamite forwarded from Zeehan was condemned as unsafe. The printed copy of directions for its use had also been so carelessly prepared that the woodcuts illustrating the mode of charging, &c. a bore-hole were not in the proper order, and were wrongly numbered and referred to in the text.

It was contemplated to deal with the whole subject of importation, storage, &c., of explosives by Act of Parliament; attention was therefore specially called to the fact that under present Regulations an explosive may not be imported here unless it has been made within the six months previous to its arrival, but no provision exists for sampling and testing and, if necessary, destroying it, although it may have been stored here for an indefinite period.

The necessity for such provision is shown by the following extract, taken from the 1890 Report of the Home Office Inspectors:—

"It is somewhat noticeable that of the fifteen accidents in the manufacture of Nitro-Glycerine preparations, nine are referable to the decomposition of the material, either Nitro-Glycerine or Nitro-Cotton. Of these the most formidable was one which occurred in and wholly destroyed the Laboratory Magazine of a new factory."

LIMESTONE, FIRECLAY, &c., (5).

A Limestone from Sorell District was of excellent quality, either for agricultural purposes or for use as a flux in smelting.

A Fireclay from the Coal Measures fused too readily for use at extreme temperatures.

COAL, CHARCOAL, AND SHALE (12).

These included on one hand a Coal of excellent quality, yielding much gas and oil and only 4.2 per cent of ash, and on the other Coals yielding, in one case, nearly 50 per cent. of ash, and in another 9 per cent. of sulphur combined with iron to form Iron Pyrites.

ASBESTOS (2).

The fibres of this were too short and brittle, and it was consequently of comparatively low value.

RESIN (2).

This was found to make an excellent varnish of a rich red color, and also to give, when burnt, a pleasant aromatic odour. It was suggested that it might possibly be found to be a suitable ingredient for incense.

KEROSENE (51).

No sample was found to be below the standard for safety, practically the whole of the kerosene now imported having a flashing point far above that required by law.

Various experiments were made for the Council of Agriculture with a view to "spoiling" kerosene to render it unfit for illuminating purposes, so that it might be admitted duty free for the use of fruit-growers in spraying trees for the destruction of vermin. The suggestions submitted by the Council were not found to be practicable, and consequently recommendation was made that the oil distillers should be applied to for a crude, partially refined, or refuse oil suitable for the purpose.

EUCALYPTUS OIL (14).

The differences in the samples were very considerable, the specific gravities, for instance, of oils extracted from different species of Eucalyptus ranging from 896 to 923. Attention has lately been called to the poisonous nature of Eucalyptus Oil; but any substance which has valuable medicinal effect in doses of two to ten drops may naturally be expected to produce serious results when taken in great excess. The related substances Turpentine and Camphor have on many occasions produced poisonous effects, fatal results ensuing usually only in the case of children.

TIN ORE (17).

One ore was found to contain Osmiridium in addition to oxide of Tin; others were mainly Titanic or Chromic Iron Sand.

GOLD, SILVER, AND LEAD ORES (182).

The highest yields from specimens assayed were—Gold, 26½ ounces, and Silver, 1925 ounces per ton.

A sample of Silver-Lead Bullion, selected by the Home buyer as of doubtful quality, had the following composition:—

	Per cent.
Silver	0·34
Gold.....	Traces
Copper.....	0·35
Antimony	0·78
Arsenic	0·24
Iron	0·14
Sulphur	0·82
Lead.....	97·33
	<hr/>
	100·00
	<hr/>

This bullion, after examination in England, was said to contain sufficient tin to materially interfere with the extraction of silver, and therefore to lower its commercial value, but this was proved to be incorrect, the mistake having arisen owing to the presence of sulphur in the particular sample examined. The total shipment yielded 98·5 per cent. of lead. The proportion of silver given was the mean result of five assays, the highest and lowest of which, obtained from different parts of the same block of bullion, differed to the extent of nearly twenty-two ounces per ton—a striking instance of want of uniformity of composition.

Among other substances examined were Graphite, Wolfram, Arsenical Pyrites, and Amalgam from a Gold-saving machine.

SUNDRY (10).

These included various morbid animal growths examined microscopically.

APPLE EXPERIMENTS.

Various experiments were made on a small scale with a view to the application of Sulphur Dioxide (the gas formed by burning sulphur) for the preservation of apples in transit, and partial arrangements were made for a practical test, but these unfortunately could not be carried out. The preservative effect is undoubted, owing to the destruction of the fungus germs on the skin, but a too free application of the gas destroys the colour of the apple. The results on the whole rather favour the use of a wrapping paper which has been treated with Bisulphite of Soda, a substance which very gradually gives off Sulphur Dioxide, and this somewhat more readily on wetting. Trial shipments treated as above indicated would certainly be advisable should the arrangements for ventilating cargoes (which have this season been carried out) be found to have failed to any considerable extent in producing the results expected from them.

W. F. WARD, *A.R.S.M.*, *Government Analyst.*

APPENDIX showing Cases of Adulteration reported during the Year 1892.

<i>Date.</i>	<i>Substance.</i>	<i>Name of Vendor.</i>	<i>Place of Sale.</i>	<i>Result of Examination.</i>
May 26	Milk	C. Greelatch	Launceston	5 per cent. of added Water.
Ditto	Ditto	W. Bailey	Ditto	Ditto.
Ditto	Rum	A. W. Roe.....	Ditto	32 per cent. under proof.
Ditto	Brandy	Ditto	Ditto	37 per cent. under proof.
June 21	Ditto	M. Dynan	Ditto	28·5 per cent. under proof.
June 29	Milk	A. Green	Hobart	20 per cent. of added Water.
July 15	Ditto	—	Launceston.....	About half of Cream extracted.
Ditto	Ditto	—	Ditto	Ditto.
Ditto	Ditto	G. Rankin.....	Ditto	Beastings found,
Ditto	Rum	P. Beanley.....	Ditto	35·7 per cent. under proof.

W. F. WARD, *A.R.S.M.*, *Government Analyst.*