



XIII. On certain fraudulent and poisonous sophistications

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To cite this article: Mr. Fredrick Accum (1820) XIII. On certain fraudulent and poisonous sophistications , Philosophical Magazine Series 1, 55:262, 102-110, DOI: [10.1080/14786442008652282](https://doi.org/10.1080/14786442008652282)

To link to this article: <http://dx.doi.org/10.1080/14786442008652282>



Published online: 29 Jul 2009.



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dark glass before your eye : which will be a great convenience at all times, but particularly when the brightness of the sun is liable to sudden changes from flying clouds."

I shall merely add, that it is to be hoped the sovereigns of the different provinces and states, mentioned in this memoir (p. 91), will encourage persons from the neighbouring countries to enter and observe this eclipse : and that the love of science will induce them to prevent such persons from being subject to any tariff, or vexatious delay at the Custom-house, on account of any astronomical or philosophical instruments which they may take with them for the purposes of observation.

XIII. *On certain fraudulent and poisonous Sophistications.*
By Mr. FREDRICK ACCUM*.

Counterfeit Pepper.

BLACK PEPPER is the fruit of a shrubby creeping plant, which grows wild in the East Indies, and is cultivated, with much advantage, for the sake of its berries, in Java and Malabar. The berries are gathered before they are ripe, and are dried in the sun. They become black and corrugated on the surface.

That factitious pepper-corns have of late been detected mixed with genuine pepper, is a fact sufficiently known†. Such an adulteration may prove, in many instances of household œconomy, exceedingly vexatious and prejudicial to those who ignorantly make use of the spurious article. I have examined large packages of both black and white pepper, by order of the Excise, and have found them to contain about 16 per cent. of this artificial compound. The spurious pepper is made up of oil cakes (the residue of lintseed, from which the oil has been pressed), common clay, and a portion of Cayenne pepper, formed in a mass, and granulated by being first passed through a sieve, and then rolled in a cask. The mode of detecting the fraud is easy. It is only necessary to throw a sample of the suspected pepper into a bowl of water; the artificial pepper-corns fall to powder, whilst the true pepper remains whole.

Ground pepper is very often sophisticated by adding to a portion of genuine pepper, a quantity of pepper dust, or the sweepings from the pepper warehouses, mixed with a little Cayenne pepper. The sweepings are known, and purchased in the market, under the name of P. D. signifying pepper dust. An in-

* From Treatise on Adulterations of Food and on Culinary Poisons.

† Thomson's Annals of Chemistry, 1816; also Repository of Arts, vol. i. 1816, p. 11.

ferior sort of this vile refuse, or the sweepings of P. D. is distinguished among venders by the abbreviation of D. P. D. denoting dust (dirt) of pepper dust.

The adulteration of pepper, and the making and selling commodities in imitation of pepper, are prohibited, under a severe penalty. The following are the words of the Act* :

“ And whereas commodities made in imitation of pepper have of late been sold and found in the possession of various dealers in pepper, and other persons in Great Britain ; be it therefore enacted, that from and after the said 5th day of July 1819, if any commodity or substance shall be prepared by any person in imitation of pepper, shall be mixed with pepper, or sold or delivered as and for, or as a substitute for, pepper, or if any such commodity or substance, alone or mixed, shall be kept for sale, sold, or delivered, or shall be offered or exposed to sale, or shall be in the custody or possession of any dealer or seller of pepper, the same, together with all pepper with which the same shall be mixed, shall be forfeited, with the packages containing the same, and shall and may be seized by any officer of excise ; and the person preparing, manufacturing, mixing as aforesaid, selling, exposing to sale, or delivering the same, or having the same in his, her, or their custody or possession, shall forfeit the sum of one hundred pounds.”

White Pepper.—The common white pepper is factitious, being prepared from the black pepper in the following manner :—The pepper is first steeped in sea water and urine, and then exposed to the heat of the sun for several days, till the rind or outer bark loosens ; it is then taken out of the steep, and, when dry, it is rubbed with the hand till the rind falls off. The white fruit is then dried, and the remains of the rind blown away like chaff. A great deal of the peculiar flavour and pungent hot taste of the pepper is taken off by this process. White pepper is always inferior in flavour and quality to the black pepper.

However, there is a sort of native white pepper, produced on a species of the pepper plant, which is much better than the factitious, and indeed little inferior to the common black pepper.

Poisonous Cayenne Pepper.—Cayenne pepper is an indiscriminate mixture of the powder of the dried pods of many species of capsicum, but especially of the *capsicum frutescens*, or bird pepper, which is the hottest of all.

This annual plant, a native of South America, is cultivated in large quantities in our West-India islands, and even frequently in our gardens, for the beauty of its pods, which are long, pointed, and pendulous, at first of a green colour, and, when ripe, of a

* George III. c. 53. § 21, 1819.

bright orange red. They are filled with a dry loose pulp, and contain many small, flat, kidney-shaped seeds. The taste of capsicum is extremely pungent and acrimonious, setting the mouth, as it were, on fire.

The principle on which its pungency depends, is soluble in water and in alcohol.

It is sometimes adulterated with red lead, to prevent it becoming bleached on exposure to light. This fraud may be readily detected by shaking up part of it in a stopped vial containing water impregnated with sulphuretted hydrogen gas, which will cause it speedily to assume a dark muddy black colour. Or the vegetable matter of the pepper may be destroyed, by throwing a mixture of one part of the suspected pepper and three of nitrate of potash (or two of chlorate of potash) into a red-hot crucible, in small quantities at a time. The mass left behind may then be digested in weak nitric acid, and the solution assayed for lead by water impregnated with sulphuretted hydrogen.

Poisonous Pickles.—Vegetable substances, preserved in the state called pickles, by means of the antiseptic power of vinegar, whose sale frequently depends greatly upon a fine lively green colour; and the consumption of which, by sea-faring people in particular, is prodigious, are sometimes intentionally coloured by means of copper. Gerkins, French beans, samphire, the green pods of capsicum, and many other pickled vegetable substances, oftener than is perhaps expected, are met with impregnated with this metal. Numerous fatal consequences are known to have ensued from the use of these stimulants of the palate, to which the fresh and pleasing hue has been imparted according to the deadly *formulæ* laid down in some modern cookery books, such as boiling the pickles with halfpence, or suffering them to stand for a considerable period in brazen vessels.

Dr. Percival* has given an account of “a young lady who amused herself, while her hair was dressing, with eating samphire pickles impregnated with copper. She soon complained of pain in the stomach; and, in five days, vomiting commenced, which was incessant for two days. After this, her stomach became prodigiously distended; and, in nine days after eating the pickle, death relieved her from her suffering.”

Among many recipes which modern authors of cookery books have given for imparting a green colour to pickles, the following are particularly deserving of censure; and it is to be hoped that they will be suppressed in future editions of the works.

“*To pickle Gerkins*†.—“Boil the vinegar in a bell-metal or copper pot; pour it boiling hot on your cucumbers.”

* Medical Transactions, vol. iv. p. 80.

† The Ladies' Library, vol. ii. p. 203.

“To make greening.”*—“Take a bit of verdigris, the bigness of a hazel-nut, finely powdered; half-a-pint of distilled vinegar, and a bit of alum powder, with a little bay salt. Put all in a bottle, shake it, and let it stand till clear. Put a small tea-spoonful into codlings, or whatever you wish to green.”

Mrs. E. Raffeld† directs, “to render pickles green, boil them with halfpence, or allow them to stand for twenty-four hours in copper or brass pans.”

To detect the presence of copper, it is only necessary to mince the pickles, and to pour liquid ammonia, diluted with an equal bulk of water, over them in a stopped phial: if the pickles contain the minutest quantity of copper, the ammonia assumes a blue colour.

Adulteration of Cream.—Cream is often adulterated with rice powder or arrow-root. The former is frequently employed for that purpose by pastry-cooks, in fabricating creams and custards, for tarts, and other kinds of pastry. The latter is often used in the London dairies. Arrow-root is preferable to rice powder; for, when converted with milk into a thick mucilage by a gentle ebullition, it imparts to cream, previously diluted with milk, a consistence and apparent richness, by no means unpalatable, without materially impairing the taste of the cream.

The arrow-root powder is mixed up with a small quantity of cold skimmed milk into a perfect, smooth, uniform mixture; more milk is then added, and the whole boiled for a few minutes, to effect the solution of the arrow-root: this compound, when perfectly cold, is mixed up with the cream. From 220 to 230 grains (or three large tea-spoonful) of arrow-root are added to one pint of milk; and one part of this solution is mixed with three of cream. It is scarcely necessary to state, that this sophistication is innocuous.

The fraud may be detected by adding to a tea-spoonful of the sophisticated cream a few drops of a solution of iodine in spirit of wine, which instantly produces with it a dark blue colour. Genuine cream acquires, by the addition of this test, a faint yellow tinge.

Poisonous Confectionary.—In the preparation of sugar plums, comfits, and other kinds of confectionary, especially those sweetmeats of inferior quality frequently exposed to sale in the open streets, for the allurement of children, the grossest abuses are committed. The white comfits, called sugar pease, are chiefly composed of a mixture of sugar, starch, and Cornish clay (a species of very white pipe-clay); and the red sugar drops are usually coloured with the inferior kind of vermilion. This pigment is ge-

* Modern Cookery, or The English Housewife—2d edition, p. 94.

† The English Housekeeper, p. 352, 354.

nerally adulterated with red lead. Other kinds of sweetmeats are sometimes rendered poisonous by being coloured with preparations of copper. The following account of Mr. Miles* may be advanced in proof of this statement:

"Some time ago, while residing in the house of a confectioner, I noticed the colouring of the green fancy sweetmeats being done by dissolving sap-green in brandy. Now sap-green itself, as prepared from the juice of the buckthorn berries, is no doubt a harmless substance; but the manufacturers of this colour have for many years past produced various tints, some extremely bright, which there can be no doubt are effected by adding preparations of copper.

"The sweetmeats which accompany these lines you will find exhibit vestiges of being contaminated with copper.—The practice of colouring these articles of confectionary should, therefore, be banished; the proprietors of which are not aware of the deleterious quality of the substances employed by them."

The foreign conserves, such as small green limes, citrons, hoptops, plums, angelica roots, &c. imported into this country, and usually sold in round chip boxes, are frequently impregnated with copper.

The adulteration of confitures by means of clay, may be detected by simply dissolving the comfits in a large quantity of boiling water. The clay, after suffering the mixture to stand undisturbed for a few days, will fall to the bottom of the vessel; and on decanting the clear fluid, and suffering the sediment to become dry gradually, it may be obtained in a separate state. If the adulteration has been effected by means of clay, the obtained precipitate, on exposure to a red heat in the bowl of a common tobacco-pipe, acquires a brick hardness.

The presence of copper may be detected by pouring over the comfits liquid ammonia, which speedily acquires a blue colour, if this metal be present. The presence of lead is rendered obvious by water impregnated with sulphuretted hydrogen, acidulated with muriatic acid, which assumes a dark brown or black colour, if lead be present.

Poisonous Catsup.—This article is very often subjected to one of the most reprehensible modes of adulteration ever devised. Quantities are daily to be met with, which, on a chemical examination, are found to abound with copper. Indeed, this condiment is often nothing else than the residue left behind after the process employed for obtaining distilled vinegar, subsequently diluted with a decoction of the outer green husk of the walnut, and seasoned with all-spice, Cayenne pepper, pimento, onions, and common salt.

* Phil. Mag. No. 258, vol. liv. 1819, p. 317.

The quantity of copper which we have, more than once, detected in this sauce, used for seasoning, and which, on account of its cheapness, is much resorted to by people in the lower walks of life, has exceeded the proportion of lead to be met with in other articles employed in domestic œconomy.

The following account of Mr. Lewis* on this subject will be sufficient to cause the public to be on their guard :

“ Being in the habit of frequently purchasing large quantities of pickles and other culinary sauces, for the use of my establishment, and also for foreign trade, it fell lately to my lot to purchase from a manufacturer of those commodities a quantity of walnut catsup, apparently of an excellent quality; but, to my great surprise, I had reason to believe that the article might be contaminated with some deleterious substance, from circumstances which happened in my business as a tavern keeper, but which are unnecessary to be detailed here; and it was this that induced me to make inquiry concerning the compounding of the suspected articles.

“ The catsup being prepared by boiling in a copper, as is usually practised, the outer green shell of walnuts, after having been suffered to turn black on exposure to air, in combination with common salt, with a portion of pimento and pepper-dust, in common vinegar, strengthened with some vinegar extract left behind as residue in the still of vinegar manufacturers; I therefore suspected that the catsup might be impregnated with some copper. To convince myself of this opinion, I boiled down to dryness a quart of it in a stone pipkin, which yielded to me a dark brown mass. I put this mass into a crucible, and kept it in a coal fire, red-hot, till it became reduced to a porous black charcoal: on urging the heat with a pair of bellows, and stirring the mass in the crucible with the stem of a tobacco-pipe, it became, after two hours’ exposure to an intense heat, converted into a greyish-white ash; but no metal could be discriminated amongst it. I now poured upon it some aqua fortis, which dissolved nearly the whole of it, with an effervescence; and produced, after having been suffered to stand, to let the insoluble portion subside, a bright grass-green solution, of a strong metallic taste: after immersing in this solution the blade of a knife, it became instantly covered with a bright coat of copper.

“ The walnut catsup was therefore evidently strongly impregnated with copper. On informing the manufacturer of this fact, he assured me, that the same method of preparing the liquor was generally pursued, and that he had manufactured the article in a like manner for upwards of twenty years.

* *Literary Chronicle*, No. 24, p. 379.

“ Such

"Such is the statement I wish to communicate; and if you will allow it a place in your Literary Chronicle, it may perhaps tend to put the unwary on their guard against the practice of preparing this sauce by boiling it in a copper, which certainly may contaminate the liquor, and render it poisonous."

Poisonous Custard.—The leaves of the cherry laurel, *prunus lauro-cerasus*, a poisonous plant, have a nutty flavour, resembling that of the kernels of peach-stones, or of bitter almonds, which to most palates is grateful. These leaves have for many years been in use among cooks, to communicate an almond or kernel-like flavour to custards, puddings, creams, *blanc-mange*, and other delicacies of the table.

It has been asserted, that the laurel poison in custards and other articles of cookery, is, on account of its being used in very small quantities, quite harmless. To refute this assertion, numerous instances might be cited; and among them, a recent one, in which four children suffered most severely from partaking of custard flavoured with the leaves of this poisonous plant.

"Several children at a boarding-school, in the vicinity of Richmond, having partaken of some custard flavoured with the leaves of the cherry laurel, as is frequently practised by cooks, four of the poor innocents were taken severely ill in consequence. Two of them, a girl six years of age, and a boy of five years old, fell into a profound sleep, out of which they could not be roused.

"Notwithstanding the various medical exertions used, the boy remained in a stupor ten hours; and the girl nine hours: the other two, one of whom was six years old, a girl, and a girl of seven years, complained of severe pains in the epigastric region. They all recovered, after three days' illness. I am anxious to communicate to you this fact, that it may contribute to put the unwary on their guard, against the deleterious effects of flavouring culinary dishes with that baneful herb, the cherry laurel.

"I am, &c.

"THOMAS LIDIARD*."

What person of sense or prudence, then, would trust to the discretion of an ignorant cook, in mixing so dangerous an ingredient in his puddings and creams? Who but a maniac would choose to season his victuals with poison?

The water distilled from cherry laurel leaves is frequently mixed with brandy and other spirituous liquors, to impart to them the flavour of the cordial called *noyau*.

This fluid, though long in frequent use as a flavouring substance, was not known to be poisonous until the year 1728; when

* Literary Chronicle, No. 22, p. 348.—1819:

the sudden death of two women, in Dublin, after drinking some of the common distilled cherry laurel water, demonstrated its deleterious nature.

Poisonous Anchovy Sauce.—Several samples which we have examined of this fish sauce, have been found contaminated with lead.

The mode of preparation of this fish-sauce, consists in rubbing down the broken anchovy in a mortar: and this tritured mass, being of a dark brown colour, receives, without much risk of detection, a certain quantity of Venetian red, added for the purpose of colouring it, which, if genuine, is an innocent colouring substance: but instances have occurred of this pigment having been adulterated with orange lead, which is nothing else than a better kind of minium, or red oxide of lead. The fraud may be detected, as stated p. 107.

The conscientious oilmen, less anxious with respect to colour, substitute for this poison the more harmless pigment, called Armenian bole.

The following recipe for making this fish-sauce is copied from Gray's Supplement to the Pharmacopœias, p. 241.

"Anchovies, 2 lbs. to 4 lbs. and a half; pulp through a fine hair sieve; boil the bones with common salt, 7 oz. in water 6 lbs.; strain; add flour 7 oz. and the pulp of the fish; boil; pass the whole through the sieve; colour with Venetian red to your fancy. It should produce 1 gallon."

Adulteration of Mustard.—Genuine mustard, either in powder, or in the state of a paste ready for use, is perhaps rarely to be met with in the shops. The article sold under the name of *genuine Durham mustard*, is usually a mixture of mustard and common wheaten flour, with a portion of Cayenne pepper, and a large quantity of bay salt, made with water into a paste, ready for use. Some manufacturers adulterate their mustard with radish seed and pease flour.

It has often been stated, that a fine yellow colour is given to mustard by means of turmeric. We doubt the truth of this assertion. The presence of the minutest quantity of turmeric may instantly be detected, by adding to the mustard a few drops of a solution of potash, or any other alkali, which changes the bright yellow colour, to a brown or deep orange tint.

Two ounces and a half of Cayenne pepper, $1\frac{1}{2}$ lb. of bay salt, 8 lbs. of mustard flour, and $1\frac{1}{2}$ lb. of wheaten flour, made into a stiff paste, with the requisite quantity of water, in which the bay salt is previously dissolved, forms the so-called *genuine Durham mustard*, sold in pots. The salt and Cayenne pepper contribute materially to the keeping of ready-made mustard.

There

There is therefore nothing deleterious in the usual practice of adulterating this commodity of the table. The fraud only tends to deteriorate the quality and flavour of the genuine article itself.

XIV. *Defence of M. DE PRONY from the Aspersions contained in Memoir of Mr. WATT. By Mr. JOHN FAREY.*

To Mr. Tilloch.

SIR, — **T**HE memoirs of the late James Watt, Esq. which you have printed in your last volume, are highly interesting, and the writer has done no more than justice to the inventive genius of that great man in the account of the origin of the improved steam-engine.

This memoir charges M. de Prony with committing a flagrant act of injustice in his History of the improved Steam-engine, in two volumes in quarto. It is stated that M. de Prony there gives the invention of the improved steam-engine to Messrs. Perriers, never once mentioning the name of Mr. Watt.

It would indeed have been a most flagrant act of injustice if Mr. Prony had done so, and in that case I would willingly have left that gentleman to encounter all the odium which the author of the memoir throws upon him; but M. de Prony does state Mr. Watt to be the inventor, and that the improved engine was brought from England by Mr. Perrier; which is the fact. As only a few of your readers can have an opportunity of examining M. de Prony's book, and as all must concur in reprobating his conduct, whilst this allegation stands uncontroverted; it will be only justice in you to print the following extracts from the work in question.

It is entitled *Nouvelle Architecture Hydraulique, par M. de Prony, Ingénieur des Ponts et Chaussées*, in two volumes quarto, printed at Paris; the first volume in 1790, and the second in 1796.

In the preface to volume I. p. xii. is a Report on the first volume of this work to the Academy Royal in 1798. The reporter says, "Le dernier chapitre contient l'histoire et l'usage des machines à feu depuis le Marquis de Worcester, jusqu'aux dernières découvertes faites par MM. Watt et Bolton, et dont la machine à double injection vient d'être apportée en France, et présentée à l'Académie par M. de Betancourt."

Mr. Prony begins his account of steam-engines at page 563, vol. I. His history of the successive English inventions by the Marquis of Worcester, Captain Savery, Newcomen, and Cawley, is
very