

**THE REVENUE IN JEOPARDY  
FROM SPURIOUS CHEMISTRY,  
DEMONSTRATED IN RESEARCHES  
UPON WOOD-SPIRIT AND  
VINOUS-SPIRIT**

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The revenue in jeopardy from spurious chemistry, demonstrated in researches upon wood-spirit and vinous-spirit by Andrew Ure

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**ANDREW URE**

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# REVENUE IN JEOPARDY

FROM

**Spurious Chemistry,**

DEMONSTRATED

IN RESEARCHES UPON WOOD-SPIRIT AND  
VINOUS-SPIRIT.

BY



**ANDREW URE, M.D., F.R.S., &c.,**

ANALYTICAL CHEMIST TO THE BOARD OF CUSTOMS.

LONDON:  
JAMES RIDGWAY.

1843.

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## PREFACE.

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THE well-being of the country, amidst the financial difficulties which now oppress it, the protection of the national revenue, and the vindication of the principal Board for administering its laws, constrain me most reluctantly to make the present appeal to men of business and science. Placed in the painful predicament of either betraying my professional functions, or of exposing the mischievous errors of two individuals whom I have been always accustomed to esteem both as gentlemen and men of science, no alternative is left to an honest man, but to sacrifice private feelings to public duty.

During the preceding ten years, I have been occasionally consulted as an analytical Chemist, concerning various commodities of importation, by the Hon. Commissioners of Customs, and have had the good fortune to merit and obtain their confidence in the results of my analyses, and in my professional reports. In this long period of probation, out of several hundred cases, some of them delicate and complex, not one has been found in fault, so as to put either the revenue or its collectors in jeopardy. I hold, however, no official appointment, and receive no salary, being paid, as other Chemists were paid before me (and in some special instances since my employment), two guineas for each analysis, whether difficult or easy, whether costing the labour of two days or two hours. In some years, twenty or thirty cases may have occurred, in others, as in the last year, only five or six, so that the emolument cannot be an object of cupidity to a professional man of any respectability. If the employment be deemed an honour, it is not without its anxieties and its dangers, as will presently appear.

It was in the sequel of my long course of experiments on sugar-refining, undertaken at the request of the Right Hon. the Lords of the Committee of the Privy Council for Trade and Plantations,

in order to settle the relation between the drawbacks on refined sugars, and the import duty on raw sugars, that I was first consulted professionally by the Board of Customs\*. About that time, viz., nine or ten years ago, a good deal of sugar began to be imported in the state of concentrated cane-juice, upon which the duty was ordered to be levied, at the rate of twenty-four shillings per cwt. for the crystallizable portion, and of nine shillings for the molasses. Samples of this rich cane-juice were sent for analysis to a considerable chemical establishment in London, where, by an unskilful process of boiling, they were converted entirely into molasses—an easy transition, to which cane-juice is very prone, but from which it cannot be restored to sugar by any means. The revenue suffered a proportionate defalcation in consequence of such a defective mode of analysis. When a similar cane-juice was afterwards entrusted to me, it yielded a product in granular sugar, greater, as was alleged by the sugar-refiners, than it would produce in their operations on the large scale. Be this as it may, the revenue was protected in this department, as the President of the Board of Trade (Mr. Poulett Thomson, afterwards Lord Sydenham) stated in his place in the House of Commons, and the sugar-refiners soon adopted such improvements in their business, as to obtain the same proportion of saccharine grain out of the cane-juice which I did, so that the dispute was quietly adjusted. Since then, the Hon. Commissioners have called upon me very generally to examine and report upon sundry kinds of merchandize of uncertain nature or quality, and they have found my decisions to be so correct and reasonable,

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\* The results of these experiments made upon nearly 100 tons of sugar, tended to disclose an annual drainage of the exchequer of upwards of £300,000, secretly involved in the drawbacks. For this irksome and invidious labour of two years, I was paid at the rate of £400 per annum, being less than half the sum which I was under engagements to earn, and could have realized by literary productions: but for this task I was disqualified for other two years by the deprivation of my health, in superintending the sugar-house, amidst many difficulties.



as to be acquiesced in eventually by the fair trader. The business of the Board has never, in my experience, been obstructed in any matter connected with my analyses, till the recent affair of Messrs. Tennants, Clow and Co. of Liverpool, which forms the immediate motive of the present publication.

The attorney-general, Sir Frederick Pollock, takes occasion sometimes, in addressing a jury, after his cross-examination of scientific witnesses, to taunt the *philosophers*, as men ready to give evidence and certificates in favour of either side of any question for a suitable fee; and envenoms his sarcasms by quoting the memorable declaration of Chief Justice Dallas, on the trial as to the cause of the fire in Severn and King's sugar-house, when the Chemists of the metropolis, banded and pitched against each other like two troops of prize-fighters, swore point-blank to opposite results in like experiments: "These two days are not days of triumph, but days of humiliation for science." It must be owned, that some professional men are too careless of their reputation in this respect, and grant certificates upon very slender and often erroneous grounds. Two attestations of this kind have been the primary causes of all the annoyance in the present case; and have, in conjunction with another report, equally incorrect, though not *obtruded* upon the guardians of the revenue, placed it in no little jeopardy. For had I not stood firm in the imminent deadly breach, at the risk of my professional reputation—had I given way, as most men would have done in my situation to such authoritative counter-attestations from two of the most popular Professors of Chemistry in London, the consequences to the revenue would have been very disastrous. Henceforth a flood of alcohol would have been poured into the markets of the United Kingdom, under the mask of naphtha, from every foreign state where it is made, duty free, and also from illicit stills at home, to the great defalcation of the spirit-duties; for who would have dared to shut the sluices again, after their systematic demolition by scientific sappers, sanctioned by the Board of Customs?

One of these Professors has, indeed, been recently constrained by weighty facts, which I repeatedly urged upon him, to repeat

his analysis, in conjunction with a chemical friend, and to acknowledge his error, but with certain sophistical reservations. The other may, for aught I know, have died to his opinion; but he has made to me at least, the only *individual* aggrieved, no sign of repentance. Since the matter, therefore, still remains in a questionable shape, and since a dispute purely chemical cannot be referred for decision to the Hon. Commissioners of Customs, however well qualified they may be for discharging their legitimate functions, it must of necessity be laid before the chemical world at large, through the medium of the press. To that tribunal I cheerfully appeal, conscious of the justness of my cause, and of having previously proffered, but in vain, every courteous method of persuasion, conviction, and even demonstration, towards my brother professors. Hitherto it has been customary for men of science to receive the *positive* results of observation and experiment obtained by persons of acknowledged probity and experience, as philosophical facts, before which all *negative* surmises were held of no account. Chemistry is merely a record of such facts, collected from thousands of different hands, arranged in a certain order. Were our two Professors to limit their lectures or their class-books, to their own discoveries, what a poor figure would they respectively cut? Now, since they admit the deductions of other observers, and some of mine, published long ago among the rest, why deny the reality of my positive results, as they have both done, in the present case, with regard to the production of sulphuric ether from the contraband liquor placed in all our hands for examination? This denial is not more a breach of common courtesy, than it is of inductive science; for *ether* is too characteristic a substance to be mistaken for any thing else, and it is produceable from alcohol alone. Should others fail in making ether out of the same liquor, their failure can prove nothing but their want of science or skill; surely not the absence of a body already obtained in very measurable quantity and quality.

13, Charlotte Street, Bedford Square,

April 20th, 1843.

# RESEARCHES

ON

## WOOD-SPIRIT AND VINOUS-SPIRIT.

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*"Articles are imported under the name of Pyroligneous Ether, Spirit, &c., which are most suspiciously identical with Alcohol, and which, if not closely examined, may lead to serious frauds upon the revenue. Strong Alcohol, disguised as to smell and taste, as in those respects to resemble Pyroxylic Spirit, has already been found in the market."*

Brande's Manual of Chemistry, London, 1836, p. 1125, foot note.

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A CARGO of eighteen casks was entered on the 22d and 30th of September, 1842, as naphtha, in the Custom-house, Liverpool, by Messrs. Tennants, Clow and Co., merchants there, at the valuation in the whole of £50, with an additional 10 per cent. As some doubts were entertained of its being genuine naphtha it was not delivered, but referred to the consideration of the Board of Customs in London. The importers, being apprised of this circumstance, applied to the Board, declaring, "ours is *bond fide* such naphtha as contemplated by your Honours." This memorial is dated 17th October, 1842.

After due deliberation, a sample bottle of the naphtha was ordered by the Board to be sent up to them from Liverpool, which they forwarded to me for analysis; and on the 22d of November, after a careful examination of its contents, I gave in the following report:

"The liquor in the bottle is wrongly called naphtha. It is crude pyroligneous acid, or crude vinegar distilled from wood; but is so weak in acid that 100 parts of it contain only one and two-tenths of real acid, whereas ordinary pyroligneous acid contains from five to seven per cent. But this weakness in acid proceeds from its being mixed with a large proportion of alcohol or strong whisky—a circumstance which is betrayed by the specific gravity of the said liquid, which is much less than water, being only 0.942 to water, 1000; whereas wood-vinegar, in the crude state of pyroligneous acid, is from 1.012 to 1.025 specific gravity, as found in commerce. When the said acid liquor you sent me is neutralized with quicklime and distilled, it affords 70 per cent. of alcohol, of specific gravity 0.878, at 60 Fahr., which is 30 per