

Lind's letter on lead glazes – Scots Magazine 1754

*To the author of the SCOTS MAGAZINE.*  
*S I R, Edinburgh, May 18. 1754.*  
**W**E are informed, that the Swedes  
have lately prohibited the use  
of copper vessels. Copper is a metal  
which is easily dissolved by all salts,  
whether acid or alkaline; and even by  
being exposed for some time to the air,  
contracts a rust of a virulent and poi-  
sonous quality. There are too many  
well-known instances of the fatal con-  
sequences of eating food dressed in cop-  
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per vessels, not sufficiently cleaned from this rust. I knew a dozen people who narrowly escaped with life, after drinking moderately of wine that had been pumped out of a cask with a copper pump, which had stood in it for some time. All acid liquors, or even water, by standing long in a copper vessel, will dissolve as much of the metal as will communicate to them its noxious qualities.

The effects of this poison, or of a quantity of verdegriſe taken inwardly, are immediate, and soon discover themselves, as it operates directly upon the stomach. But there is a slower, more insidious, though equally certain poison, void of smell or taste, (of which it may be improper to say more in a public paper), found in the solution or salt of lead. This is a metal easily corroded, especially by the warm steams of acids, such as, vinegar, cyder, Rhenish wine, &c. I received the following information from a gentleman in London.

“ That, intending to make the extract of lemons, he squeezed the juice of a thousand lemons into a large glazed coarse earthen vessel, and allowed it to stand for two days: he then poured off an English gallon of the clear juice into another glazed flat earthen vessel, and put it in a pot of boiling water to evaporate. During the evaporation, a great quantity of sediment appeared among it; which, upon examination, he found to be the salt or sugar of lead, to the quantity of several ounces. He then poured off the remaining part of the juice out of the first earthen vessel, which had not been put upon the fire, and was surpris'd to find the sides and bottom of it also loaded with a large proportion of the same sort of salt.”

As this might have happened in the hands of persons less judicious, and ignorant of the effects of this deceitful poison, it may be proper to observe, that these earthen vessels have been glazed with lead, or lead ore; which glazing is easily dissolved by almost all kind of acids, and converted into this noxious salt, or sugar, as it is called, of lead. The glazing of all the common brown



pottery-ware, of a brown or black colour, is either lead or lead ore. If black, it is lead ore, with a small proportion of manganese, which is a species of iron ore. If yellow, the glazing is lead ore; and appears yellowish by having some pipe or white clay under it. The colour of the common pottery-ware is red, as the vessels are made of the same clay with common bricks, which is always red when baked. These vessels are so porous, that they are penetrated by all salts, acid or alkaline, and so are unfit for containing any saline substance. They are improper (though too often used) for preserving sour fruits, or pickles with vinegar. I have observed the glazing of such vessels much corroded, by keeping in them for some time pickled French beans, upon which boiling vinegar had been poured; and, upon evaporating the vinegar, have found a quantity of the salt of lead. But a sure way of judging, whether the vinegar, or any other acid contents, have dissolved part of the glazing of such vessels, is by their becoming vapid after standing in them some time, or losing their sharpness, and acquiring a sweetish taste; in which case the contents are to be thrown away as pernicious.

The most proper vessels for preparing the inspissated juice of lemons, oranges, or any other acid fruits, are, first, porcelane, or china ware. The substance of these is of so close a texture, that no saline or other liquor can penetrate them. The glazing, which is made likewise of the substance of the china, is so firm and close, that no salt or saline substance can have the least effect upon it. By china I mean the Chinese china; for some species of the European manufactory are certainly glazed with a fine glass of lead, &c.

Next to china, and as I have found sufficiently fit for the purpose, is the stone ware commonly called *Staffordshire*. The substance of these vessels is a composition of black flint, and a strong clay which bakes white. Their outsides are glazed by throwing into the furnace, when well heated, common or  
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sea salt decrepitated; the steam or acid of which flying up among the vessels, vitrifies the outsides of them, and gives them the glazing.

This stone ware I could never find injured or affected by any kind of salts, whether acid or alkaline, or any liquors hot or cold; nor do such vessels alter the taste or quality of any thing put into them. They are therefore extremely proper for all common uses; but require a careful management, as they are much apter to crack with any sudden heat than the Chinese china.\*

The Hessian ware, or the vessels made of the same substance with the Duke d'Alva's bottles, commonly called *grey-beards*, I take to be made of a strong pipe-clay mixed with sand; and glazed in the baking by the alkaline salt which rises from the wood used in baking them; wood having always the effect, when the heat of the furnace is intense, to vitrify the outside of all clays.

I had almost forgot to mention the pottery-ware with a white glazing, commonly called *Delft*, the best being made there. The substance of the vessels is a whitish clay when baked, and soft, as not having endured a great heat in the baking. The glazing is a composition of calcined lead, calcined tin, sand, some coarse alkaline salt, and sandiver; which being run into a white glass, (the white colour being owing to the tin), is afterwards ground in a mill, then mixed with water, and the vessels, after being baked in the furnace, are dipped into it, and put into the furnace a second time; by which means, with a small degree of heat, the white glass runs upon the vessels. This glazing is exceedingly soft, and easily cracks. What effect acids will have upon it, I cannot say, as not having tried them. But I now reckon such vessels improper for inspissating the juice of lemons or oranges.

JAMES LIND.