



THE COMPLETE WORKS  
OF

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trans: Chris. Packe



TARTAR  
FROM LEES OF WINE



A TRUE AND PERFECT  
DESCRIPTION  
OF  
EXTRACTING GOOD TARTAR  
FROM THE  
LEES OF WINE.

And that after a Plentiful Manner.

To the most Reverend PRINCE JOHN PHILIP, Lord Arch-Bishop of Moguntina, HIGH CHANCELLOR OF THE EMPIRE, AND ELECTOR, BISHOP OF HERBIPOLENSIS, DUKE OF FRANCONIA, & etc., my most Honoured Lord.

I Presume, you remember (most Reverend and Noble Lord Arch-Bishop and Elector) that about two Years since, I craved Your Lordship's Licence, to Extract TARTAR from the Lees of Wine; which you Highness was pleased to grant me. From which Work, seeing I have been hitherto hindered by the multiplicity of other business, and the great Waste and Loss which is daily sustained in the Electorate of MOGUNTINA, and Bishoprick of HERBIPOLENSIS, proceeding from the Ignorance of the Lees, daily troubles me; I have determined to dedicate this gainfull EXTRACTION OF TARTAR FROM THE LEES OF WINE, to your Electoral Reverence, under whose Patronage I may be safe, and for this Reason especially, Because none of the Princes of GERMANY enjoy a greater Vintage than your Reverend Highness; to whom not only a good part of the Tract of the RHINE, but almost the whole Jurisdiction of MAENE, together with FRANCONIA, by Divine Providence, belongs; being very fruitful in Wines; where also much Lees are cast away, through Ignorance OF THE WAY of extracting their TARTAR, for the Good of the Country, from which a good Spirit of Wine might first be drawn by Distillation; the TARTAR contained in the thick Lees, and remaining in the bottom of the Still, is by all Men cast away, as unprofitable, a few excepted, who with great Labour dry them, and of them make clavellated Ashes: Which Waste or Loss of the Lees, seeing that it

makes every year an incredible Loss of TARTAR, I have thought fit to expose the Knowledge of this Mystery to the Eyes of all Men, for the Good of my Country, by which some being instructed, may set about the EXTRACTION OF TARTAR. with great Gain, not doubting, but many, when they shall see this Labour to be profitable to others, undertaking the same, will bring great Profit to their impoverished Country.

Therefore I trust, this Little Work will be acceptable to your Reverend Highness. And I pray the Giver of all Good Things, to furnish both your Soul and Body with His Gracious Benefits, who study to be

Your Highness's most

Humble Servant,

J. Rud. Glauber.

**A True and Perfect Description of Extracting good TARTAR from the LEES of WINE, & etc.**

First of all, we must know what Dregs are, or what is their Essence and Nature, how they are resolved into Parts, and the Good separated from the Un-useful, because without the knowledge of the thing we can't give a right judgement of it, but must erre:

Therefore it is necessary that we know what we have in our hands, that we may the safer handle it. For this cause I shall shew the Ignorant what are properly Dregs, and which way the better part may be extracted, that hereafter so great a Good may not by ignorant sluggishness be laid aside, but converted to the profit of all.

All thick matter, whether it be of Wine, Beer, Vinegar, or the like, when it has stood a little, sends the earthy, heavy, and more thick part of it, to the bottom, which we call Dreggs or Lees, upon which the clearer part flows, to be separated from the impurity, as in the making of common drinks may be seen.

There was no use of these Dregs heretofore, except the making Brandy with them, and the rest to be thrown out of doors, in which was much Virtue, which Men did not think of: But that all things are not unprofitable which the Vulgar pronounce so, and that there may be great Virtue in ordinary Matter, I shall demonstrate by this Excrement of Wine.

When the Juice out of the Winepress is put into Hogsheads, that there working, the dregs falling to the bottom, the clean Wine may come out, the superfluous Salt of new Wine, while it is squeezed out of the Grapes, with the same labour is separated, part sticking to the sides of the Vessel, which we call TARTAR; but the greater part of this Salt or Tartar, imply'd in the turbid dregs like Sand, sinks to the bottom. Besides, this is the property of Salts, that by a hot humour they make a thin water, the humour growing cold, not being able to keep all the dissolved Salt that is compelled to separate, which excluded the Vehicle, seeks a new place. If you put into the Solutions Sticks or Strings, that Crystalline Salt, in a cubical or angular

figure agreeable to its nature, will stick to them; or otherwise it cleaves to the sides of the Vessel.

'Tis above and beyond all Controversie, that the Grape above all Vegetables has much Salt, not sensible, unless it is fermented with a minute heat, which working by Nature, endeavours a separation, while the purer and more liquid part retains so much Salt as the Wine has need of, the thicker Salt being extorbated, part of which incrustates the sides of the Vessel, part of much thickness sticks, and subsiding with them, gets the appellation of dregs, from which the vulgar are wont to destill a Spirit of Brandy Wine: But these dregs are not a useless matter, as they have been hitherto thought, for much TARTAR may be extracted out of 'em with little cost.

But he that shall search more narrowly into the thing, will find a way whereby poor and decaying Wine may be made good.

In some places, as suppose in FRANCONIA, ALSATIA, ANSTRIA, and the RHENISH TRACT, most fruitful for store of wine, these lees of wine are made nothing of, but are given to Swine and other Cattle to drink, by which means the Tartar in it so purges 'em, that they are soon fat; they seldom try to draw the spirit thence. Otherwhere, where wine is not made, especially where they fetch their wine a great way, they are much esteemed of, not only because wine may be drawn from 'em, but also put in small Hempen sacks, are pressed in adapted Presses, a good mixt wine flowing thence saleable to others; yet this being but a small wine, many have destinated it for Vinegar, to which it best agrees; but he that knows how to restore to it what it lost in pressing, may make a palatable strong wine, not inferiour to what it was at first: But this Secret belongs to another place, I shall here only treat of Vinegar and Spirit of Wine.

In HOLLAND, FRANCE, ITALY, this pressing of the dregs and preparation of Vinegar is of frequent use, and very profitable to many, who get nothing but what they squeeze out of the dregs they have of the Vintners, and convert the Wine into Vinegar; the residue of the dregs they put into Barrels, and sell it to Hatters, which being boiled in water, they thicken rough Hats with it; for Wool is brought into a little compass by hot water, and by how much the hotter that

is, the Hats are made the thicker by it: For since it is the nature of Tartar to make the water wherein 'tis diluted hotter than fire, and since there is much Tartar in the dregs, by virtue of which, water acquires a more intense degree of heat, which the ignorant Hatters ascribe to the limosity of dregs, rather to be attributed to the inherent Tartar, hence they put so much dregs in every pot as they know to be needful to the constipation of the Wool.

And this is the use to which prest Lees are put, but if they have a greater quantity than the Hatters use, sometimes they are corrupted, part turns to Worms, and afterward to a most stinking dirt fit for nothing. When they sell them to the Hatters, then the Vinegar made of the wine prest out of them, which cost them little, brings 'em great profit, otherwise they would not gain much by their own Art, if they were not eased by the Hatters taking the residue.

But after what manner Vinegar may be made, I shall briefly shew: Vinegar-makers dispose many Hogsheads upon Stands a foot high from the ground, under which a pot to receive the Vinegar is set, erected in a hot place, the upper head being taken out, about the middle of the Hogshead they place two pieces of Wood across, sustaining another foraminous bottom, upon which they put the Vinous dregs, filling the Vessel even to the top, then they cover it with the head or some good square Cover, that little Air may enter; when in two or three days, by putting in your hand, sufficient heat is perceived, the wine which before was prest out of the dregs, is to be poured to it, so that the wine may be above the dregs, so the Hogshead close covered is left, till on the opposite row another Hogshead can be filled with the like dregs and grow hot; then the Wine being drawn out of the first hogshead, is poured into this, till the dregs in the first hogshead begin again to be hot, which are again to be macerated in the first Wine. This mutual affusion and depletion of the Wine is to be repeated till a just acidity follows, which may be done in the space of two or three weeks, according to the heat of the Air; which will be good and permanent Vinegar, to be kept for sale in another Hogshead. Presently the first dregs being hot, fresh wine is to be poured to them, doing all things as before, till this wine also shall become good Vinegar.

If you have many Hogsheads, you may make Vinegar all Summer only, but if you will also work in Winter, the place may be made hot by the help of a Furnace.

After this manner in FRANCE and HOLLAND many Families are maintained and enriched, by the dregs of Wine prest and converted to Vinegar.

And now I shall produce my Invention, a good Gift of God, as I take it, to good men; 'Tis certain, that in Viniferous Countries, where much dregs are brought for a small price, they may obtain a profit to themselves not to be despised; for which (next to God) they are beholden to me, who by unwearied toil have found this Science, and let 'em shew their gratitude towards Needy Persons, lest they incur the displeasure of God, and so turn this Blessing into a Curse.

First of all, let there be a good Press, with a long Beam, from which hang weights, let there be put in small bags at least 5 or 6 Firkins of Lees, and them soundly prest.

The wine that comes out by pression, you may turn to Vinegar, either by the help of other Lees, or some other method; pour as much of the thick in the sacks with a due proportion of water into a Still, let it not boil in stilling, the Head being on, apply the refrigeratory, manage the distillation as otherwise Spirit of Wine is wont to be drawn, keep the Spirit proceeding thence till there is a good quantity of it, which you ought to rectifie or clarifie by several distillations: (tho this Spirit is not abundant in the dry dregs, yet there is sufficient to pay for the making of the Vinegar and Tartar) when there comes an insipid water, take out the fire, open the Pipe or Cock coming from the Still, let the water with the dregs run through the Channel into a great sack put to the Press, when 'tis close tyed, press it, that the moist may be separated from the dry: The Liquor cooling in a peculiar Vessel, and congealed into Tartar, will stick to the sides, the rest falls down like sand: Take out the dregs remaining in the sack, dry them in the heat of the Sun, butn them under a Still as wood, and you will have very sharp ashes, commonly called clavellated ashes, useful for DYERS, the price of which (at least) exceeds the pression and preparation of Tartar. When

you have finished one distillation with the Press, fill the empty Distillatory with fresh water and dregs, as before, and while you draw spirit thence, press the first dregs, and continually put the distillation to the same Press, which coming out hot, don't put it to the former, but give proper Vessels to each distillation. The day after, put the first water from which the Tartar went to the bottom, to the third distillation, instead of fresh water, that is, by dissolving and distilling new dregs in it, as I have taught: Let the faeces of the fourth distillation be poured in the second water, which hath let fall its Tartar, and so afterwards by which Compendium you will make no waste of Tartar, but what remains in the water, may take encrease from the new dregs to which it is poured, and it will give its Gain: But if you will, you may animate that acid water from which the Tartar is separated, and with a small charge, by Grain and Fruits of Trees, give it life and soul again, that it may again be made Wine, not unlike the first prest from the Lees, after the same method it is turned into Vinegar, (because 'tis already sharp, the life or soul only that preserve from Corruption being wanting) the way of proceeding will bring great Gain to him that understands it.

If you know not the administration, do as I have ordered, and instead of common water, dissolve the hard dregs in this acid, and you will have good Tartar; but that languid water may also be adhibited to other uses, which I shall set down in the end of this Book: This do, that the faeces be not burnt by too great a fire, nor the spirit stink and the still be spoiled, which you may prevent if you anoint the bottom with Lard before you put in the heavy water, and draw off the Spirit. Here I might shew a Compendium whereby the dregs, tho' dry, should not be in danger of burning, but it would be long and tedious to the Reader. But if you mind diligently what I have written you will get enough.

When you have gotten a good quantity of Tartar from the Lees, not neat to outward appearance, but very like dirt or sand, purge it yet more, that either it may be reduced to a very fair Crystal, or till it cleaves in great Fragments to the sides of the Vessel, which you may effect by the following Way. Fill a VESICA with limpid water, almost



to the top, put a little granulated Tartar into that water, soundly boiling to dissolve, putting a stick to the bottom, you may see when it is dissolved, add more by degrees, till no more will melt in the water, which you may thus find out: Fill a Pewter Saucer with this Liquor, if it contracts a little skin or cream, it shews that it has enough Tartar to produce Crystals, but if not, add more Tartar, till you see this sign in the pot; while it boils, add the scum taken off with a perforated Brass Ladle, to the dry Lees, which by reason of the Tartar adhering, when burnt, conduces to the clavellated ashes; when the boiling has drawn Tartar enough, let it be let out through the Pipe of the Still into a clean Receiver, where while the water cools. The Crystals will incrustate on the sides; apply the rest of the water to the same uses, you will do better; if you shall change it into Wine or Vinegar, let the Crystalline roughness remain in the Vessel, for if you add a new boiling, greater and fairer sorts of Crystals will be made, because by how much the thicker this Tarter is, so much the dearer 'tis held; and thus you may conciliate thickness to your Crystals. When it shall seem enough, pour the rest of the Solutions into another Vessel, in which the first Tartar has concreted: let it dry of it self, afterwards strike the sides of it with a great blow, and great Fragments of Tartar will fall down, which you may sell for profit, put the vessel to the same labour again.

This is the exact description of producing good Vinegar and Tartar necessary, for many Arts, from the basest dregs, and of justly getting much profit with little pains.

Now I proceed to make the Wine which some call Adust, or Spirit of Wine, of the Lees of Wine, without any Costs.

After the desecated Wine is poured out, put the faeces into the Still, add as much water as the dissolution of the inherent Tartar requires, kindle a fire, stir it at the bottom with a wooden Ladle, that it may not burn to; when you can no longer bear the heat of the water with your hand, and the spirits break forth, take out the Ladle, put on the Head, and distill till you percieve no spirit, but meer Phlegm; the remaining Liquor draw out into a sack close tyed, work it in the Press, and you will have spirit of wine by distillation, and

also Tartar by expression, concretion, crystallisation, with double encrease; as I shall shew more clearly by and by, that before you begin to work, you may be sure, how much you hope to gain thereby, lest you labour in vain, maturely consult that you may discern by a premissed computation what is to be done.

For instance, If five Firkins of Lees cost half a Doller each, five Firkins will yield two R. Dollers and an half; from these I press out two Firkins of Wine, two Firkins remain in the sacks, one Firkin is supposed to waste in the transfusion, when yet a Vessel seldom soaks up four quarts: I turn the two Firkins of Wine into Vinegar; the two Firkins of thick Lees being diluted with Water, I draw Spirit of Wine and press out the Tartar; this Wine drawn by the Fire, together with the dregs left of the Tartar, being reduced by burning into clavellated ashes, do equal the Charge of making the Vinegar & Tartar, but two firkins of dregs afford from 40 to 100 pounds of Tartar, as the Wine is sweeter or more acid, (tho' the harsh affords more Tartar than the sweet) but if they yield but 40 pounds, this Tartar refunds the price of the Lees; the spirituous Liquor and clavellated Ashes, recompence the Wood, and the two Firkins of pressed wine you have over-plus to be turned into Vinegar.

Or if you buy two Firkins of Lees for one H. Doller, first you may draw off the spirit; after that, you may press out about ten pounds of Tartar, both together saleable at one Doller, as much as the Lees cost; all the Liquor of the Spirit will be clear gain, by an egregious short labour to grow Rich. Suppose a Firkin to cost a Doller, and to yield not above 9 pound of Tartar, each of which is worth two Bazeins; tho' some Lees are better than others, yet seldom any are found so poor, that do not afford their value in Tartar; even the RHENISH, FRANCONIAN, and AUSTRIAN, one Firkin yielding one Doller, oftentimes affords fifty pound of Tartar, or more. Besides, we must note, if the Lees are dear, Tartar and burning spirit of wine can't be cheap, because the dearness of them depends on the scarcity of wine: But if the Lees are dear, the Vinegar, Spirit, and Tartar cheap, (which yet was never known) so that the quantity of Tartar will not yield the price of the Lees; neither also can you have the Vinegar and

spirituous wine GRATIS; yet you shall have this profit above others, living on Vinegar and burning wines only, that the Tartar and clavellated Ashes collected from the refuse of the eliquated wine, by others rejected, you may get an help, that you may sell the spirit of wine, that cost you little, for more than otherwise. If therefore he gains by only pressing wine, or distillation of the spirit, how much rather you that acquire both Vinegar and spirit of wine from those dregs for a gratuity?

One thing more I add for confirmation: If 8 Firkins of Lees, that cost 4 Dollers, make 4 or 6 Firkins of vinegar, or one of burning wine or brandy, that vinegar or brandy yields 10 or 12 Dollers: The prest or distilled dregs, if they give fifty or sixty pound of Tartar, they equallize the first price of the dregs; but if there be a less quantity of Tartar, the vinegar or spirit will stand you in but little, which being made better, or sold cheaper than ordinary, you (the seller) will allure buyers before others.

Some man may say, the Art indeed has been unheard of, and i.e gainful, but does not agree with every age and condition; for all don't understand Merchandising, but rather some abhor it, seeing the Scriptures compleatly testifie, that the fraud between the buyer and seller sticks as fast as a Pin between the stones of a wall; to whom I answer, that to every Christian an honest Occupation is permitted by Divine Providence for the sustentation of him and his, but he need not burden his Neighbour in any case. For that it is lawful to endeavour a livelihood this way, or that, is attested to by a laudable example, in both the Old and New Testaments.

This is the true way of pressing wine from Lees, and reducing it to Vinegar, and drawing out Brandy and Tartar, and incinerating the refuse.

It remains that I set down the uses to which the rest of the water from the Tartar may be adhibited with profit; but we must know by the way, that the sourness in that water is nothing but Tartar dissolved, which does not take a Crystalline form at the sides of the Vessel; therefore this acid water performs whatsoever is effected by Tartar diluted in common water.

Since there is no man but knows how to dissolve Copper in tartarised water, without the help of salt, as in the dealbation of ordinary Coins and Silver Vessels among the silver-workers may be seen, who take away the Copper sticking in the superficies of money of silver-vessels by boiling, the silver appearing as if it had nothing of copper mixed with it; to this work the aforesaid water may be very profitably applied; and seeing that a great quantity of it remains in the working of the Lees, it can scarcely be better employed than by the following method. If the viler Marcasites of Copper, every where obvious, and which cannot otherwise be melted with profit, as also the SCORIA or dross of Copper, which is thrown away, be boiled in this water, it will attract the Copper to it self; cast in Filings of Iron, and they will be exalted into Copper, and the extracted Copper will be precipitated from the water by the addition of the Iron. This gradation of Iron into Copper being done, which in outward appearance will be like a dirty Mudd, it is to beedulcorated with clear water, and then thoughtly melted by the force of fire, which will yield a very fair Copper, no way coming short of other Copper in goodness. Which Labour is very profitable, because a great quantity of tartarized water proceeds from this Work; but that it may the more easily act upon the Copper, in extracting it from the stone or Marcasite, a little salt is to be added in the boiling.

But if the Marcasite or Copprious-stone abound with too much sulphur, which yet seldom happens in the more ignoble Marcasites, they must first be torrefied, that the sulphur may be burnt, then to be ground, and boiled with the tartarised water, and precipitated with Iron; which way more Copper is acquired than was in the Copprious-stone it self, because while it is precipitated, part of the Iron is exalted to Copper, part turns to Vitriol unlike to the natural in hardness; for a green solution remains, whereby Cloth and Yarn are made as black as with common Vitriol; also it affords the best Black for Shoemakers to colour their Leather, and is naturally adapted with Oak to conciliate a black colour to Wood.

If this vitriolated Water be boiled in an Iron Pot till it be dry, and the residue melted in a strong fire, you will obtain a most

tenacious or tough Iron of wonderfull virtue, if not to be preferred to good Copper, at least to be compared with it. And so the common Copprice-stone of Iron is better than the filings or scales of Iron, if with the Lees of wine it be reduced by the spirit of the world into small Balls, when you melt them, a very ductile and pure Iron will come out, fit for more uses than common Iron; which labours if any will enter upon, they will reap fruits not to be despised.

It would not be beside the matter to annex the manner how you might use both your Tartar and Ashes at home, neither that you might be forced to sell them abroad, but it would be too long, and rather hurtful than profitable to the present business. This I think to treat of farther another time, by the Grace of God.

Here finishes the Work of TARTAR.