Vitriolated Tartar

Vitriolated Tartar is the combination of the Vegetable Alkaly & Vitriolic Acid. It differs from the last in several particulars, it is reckond more acid than the other but this may proceed from its Chrystals containing less water & therefor ought to be given in smaller doses, it is more difficult of solution in Water requiring 15 times its own weight, It requires the strongest Degree of Heat in the furnace to melt it. Tho Mr. Lewis not only made it fusible but to run thro' the Crucible. It Chrystalizes in short Chrystals of 4 sides joind together at the top, it has not such a clear appearance as the Glauber salts, it undergoes not the Watery fusion but rather decrepitates — With regard to its origin it is found in the juices of a variety of Vegetables, after they are burnt it is found in their ashes, what is used for medicin Dyeing is prepared by Art most commonly by the addition of Vitriolic Acid to Nitre where it dislodges the Nitrous acid from the Vegetable Alkaly & unites with it forming the Tartareous Acid ——————

Nitre

NITRE

As common Nitre or Salt Petre is better known than Cubic Nitre & has several propertys common with it. I shall consider it first being compounded of nitrous acid & Vegetable Alkaly while the other is the combination of the same Acid & the fossile Alkaly as in the first table what the Antients call'd Nitrum seems to have been merely a fossile or vegetable alkaly thus in the proverb. it is mentioned in opposition to vinegar, & from what Pliny says of it, it seems to have been a detergent, it is uncertain when it was discovered but is mentioned very early by Chymists, Nitre melts in the lowest degree of red Heat & by increasing the heat the acid is dissipated & leaves about half mostly alkaline, it disolves in six times its own quantity of cold water but in much less of warm this solution of it easily deposites Chrystals which are six sided & different from the Glaubers salts in having the angles equal & end in a a pyramid at the top, they contain little water & do not undergo spontaneous Calcination nor Watry fusion, Its dis-

distinguishing Characteristic is its action upon Inflamable Bodys, when a little Nitre is melted in a Crucible & made red hot at bottom if a little Charcoal is added a constant series of Explosions are emitted with a bright flame, on the Addition of more Charcoal this is repeated till by degrees the Nitre turns less fusible & the Charcoal having no more effect upon it, it is found Solid & pure fixed Alkaly — Much the same Phenomenon happens on the addition of Sulphur to the Nitre melted as before, only the flame is exceeding bright & the explosion not quite so great, the brightness of the flame produced by Sulphur added to the Nitre has much the appearance of Lightning tho some experiments in natural philosophy prove it to be from different Causes — When the deflagration with the Sulphur ceases the remainder is calld Sal prunella being the vegetable Alkaly of the nitre with the Vitriolic acid of the Sulphur & is the same with Vitriolated Tartar — only having a small portion

portion of Hepars Sulphuras with it. Sal Prunella is just the same & prepaird in the same manner. The remainder from deflagrating with charcoal plainly indicates that the acid forsakes the Alkaly to unite with the inflamable matter, so that Magnus is Wrong in calling what is carried off in flame Brimstone as it is a mixture of the acid with Inflamable substance for when these volatile flames are condensed we find no traces of the original nitre in them. Nitre may be melted longenough with Charcoal without deflagration unless brought to the red heat when it instantly takes fire. This deflagration of nitre with Inflamable substances is very useful as it enables us to detect the Inflamable principle in bodys which might be seperated by the fire — Nitre is an ingredient in all explosive substances & preparations, you all know the prodigious effects of Gunpower, but it is fully equalled by the explosive power of Pulvis fulminans which is a mixture of Vegetable Alkaly & Nitre, ifa small quantity of

of this is Heated on a Shovel it at first turns of a Brownish Colour & seems to boil when in a few minutes it goes off as loud as a Musket, Thus dis-
-fering from Gunpowder which requires to be confind whereas the other explodes in the open Air, The acid of Nitre is very easily obtaind by mixing the Vi-
-triolic acid with it in a retort, the Nitre is some tinged of a Yellow Colour, but on the increase of heat the Nitrous acid comes over in red fumes, about 8 ounces of the acid should be put to one lb of the Nitre & the retort put into a sand bath the Heat should be gradually Increased till it comes to a red heat as if applyd too fast the vapour would be in danger of breaking the Vessels - The Lute which I find to answer best in this operation is com-
-pounded of one part Fine Clay to four of Sand — In condensing the Vapour I lay a Wet Cloth over the receiver & kept it so by a Cotton Thread one end of which is put into a Bason of water high-
-er than the receiver the water passes along the Thread

Thread into the Cloth from which it drops into a
Vessel below & keeps the receiver always wet &
cool, The acid that comes over is Glaubers spirit
of Nitre & call'd Aqua fortis by those who prepare
it for sale The Vitriolic acid is add to make the di-
solution more easy as it requires a strong Heat &
Strong Vessels to seperate the acid from its Alkaly
what remains in the Retort is the Vitriolic acid
combind with the Alkaly of the Nitre forming
the Compound Salt call'd Vitriolated tartar, this was
at first distinguished from it by Chymists who
call'd it Vitriolated Nitre or Sale duobus &c, but we
now know it to be the Vitriolated tartar with this
difference only that it contain a little too much of
the Vitriolic acid or sometimes the Nitre. This how-
ever is to be remidied by Chrystalization, the common
proportion of vitriolic acid to dislodge the Nitrous
acid is as 9 to 16 - The Nitrous acid for sale must be
diluted with a quantity of water in the receiver equal
to the Vitriolic acid in the retort & is then call'd aqua-
fortis & the difference betwixt the degrees of double or sin-

Single is only in proportion to the quantity of wa-
-ter put into the receiver - The Acid was formerly
obtained by adding some kind of Calcareous Earth to
it but since the Vitriolic Acid has been procurd
cheap it has it has been generally used - The comm-
method used was to mix Salt of Iron or Copperas
in powder with nitre & to distill them into an
Iron pot which may be used here notwithstanding
the Corosiveness of the acid for the Heat soon be-
comes so Strong as to keep the Acid from touching
the Iron & when the acid is so strong it is not so
apt to corade as when more diluted the alkaly is
seperated from the acid by diflagration with Charcoal
but still some acid remains diffused thro the
alkaly which does not come in contact with the
Charcoal as Hasman partly obseves, Newman
proposes a better method by mixing them in pow-
der & projecting them into a hot Crucible, but
care should be taken that so much Charcoal
be used as that no acid may remain unconsumd
The

The common proportion in general is 1 part Charcoal to 7 of Nitre, There is an inconvenience however in this process as the Nitre is apt to flash like Gunpowder & to have part of it Thrown over the Crucible & lost - this I have obviated by mixing them up in a hard paste with water in form of a Cone & then setting fire to it, It burns slowly as the water must be evaporated from every part as it burns, the Nitre thus obtained is called Nitrum fixum but improperly as it is a pure alkaly. When this is properly performed the Alkaly increases in weight, & I shall explain hereafter upon what principle this depends, Tartar is also used for obtaining the alkaly of the nitre fixed, The usual is to add about 7 parts of the Tartar to 6 of the Nitre & set fire to them like a squib, the Inflamable part of both the nitre & Tartar is destroyed & the alkaly of both left which is white, & called white flux, from its being used in assaying & refining the ores of metals by mixing the acid & alkaly in the above

above proportion the Nitre will be again had aft.
Chrystalization.

Origin of Nitre

common Nitre comes in great quantitys from Persia China & the Northern parts of Europe, we are not well acquainted with the form it is found in the former of these Places, some suppose it to be in loose crumbly substances by the sides of hills but from what I can learn from people who observ'd it last, was, it appears to be produc-ed from the ground & the spots where it is found are called Salt Petre grounds, & these are cold and Barren however this account is to be doubted as it is no where to be found so in Europe, but pre-pared from animal or Vegetable substances mix-ed with loose Earth such as Lime or Marle and exposed to North East Winds & kept from the sun Cramer recommends the following method, In a little

that

Hut open on every side & covered at the top with
Thatch, to just rising Several shallow boxes in each
of which must be put a mixture of Garden Mould
ashes & Quick Lime & this constantly mixed with
Urine, after a Month we shall find a quantity of Nitre
which is to be seperated from the Common Salt also
Produced, the method used in Germany is more rude
but answers as well. Those Princes who chose to
have Nitre produced on their Territories have made
Laws that all fences should be make of earth with
a mixture of Quicklime, which after Standing some
years are taken down & nitre extracted from them
by Solution, the Earth filled up again yields
after as much time, more Nitre — In France there
are People who make the preparation of Nitre their
employment they collect materials for it, chiefly
old rubbish of Houses not much exposed to rain
particularly such as has been exposed to the fumes
of